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New Forms of Old Materials of Industrial Art.

REMARKABLE feature of that application of science to enlarge the resources of industry which characterises the activity of the present phase of manufacturing development is the application of substances so newly discovered, or so remarkably transformed, by the skill of the chemist, as to assume the aspect almost of new creations. It is now a considerable time since the discovery of the phenomena of allotropism taught us that there were more secrets in chemistry than could be explained by the scales, the blow-pipe, and the test-tube. The most remarkable, at all events for its magnitude, of these new developments of industrial science has been the mode in which steel can now be produced at far less than the cost of iron forty years ago, by the process invented by Bessemer. Steel, under his influence, has become almost as new a material for our industry as if a wholly new ore had been discovered and brought into use, and, in the great majority of cases, is driving iron entirely out of the field. Hand-in-hand with the discoveries of what we may call the industrial chemist have marched those of the scientific analyst. The reduction of the rarer and more perishable metals from their earths, as in the case of sodium, potassium, and their neighbours, has been accompanied by the discovery of other metals so absolutely new to chemistry as to take the names of, or those imposed by, their discoverers. And now we hear how the means have been perfected of reducing one metal which, half a century ago, may almost be said to have had only a theoretic or potential existence, not only into workable form, but into marketable condition. Among the most abundant mineral substances which form the crust of our globe in its common form of earth, aluminium has been for some time known to possess qualities of extreme value, as, for example, lightness almost unrivalled among metals, and as little disposition to oxidise as gold itself. The barrier to the introduction of aluminium into industrial art has been the great cost of its reduction from alumina; and its chief use, so far as we are aware, hitherto, has been for optical instruments, in which the advantage derived from the combination of strength and lightness that it afforded was enough to enable the optician to overcome the disadvantage of its cost.

A new process, we now hear, has been lately perfected, by which aluminium may be produced at about the price of copper,—that is to say, at 100*l*., instead of at the present cost of 1,000*l*., per ton. Should this prove to be correct, the effect of the discovery is not easy to anticipate. To the architect one of the first suggestions will be that it will provide a material for roofing which shall possess all the great superiority of lead over cheaper materials, while avoiding both the great weight and the comparatively perishable character of that time-honoured roofing metal. If cost permit, and if durability be assured, the advantages of large sheets of well-joined metal, of very low specific gravity, over the heavy and clumsy structure of tiles and of slates, the numerous joints of which often admit wind or rain, and hardly ever wholly exclude drifting snow, will be very soon appreciated by the householder.

Another comparatively new invention,—perhaps we should rather speak of it as quantitative than as a qualitative discovery,—is that of asbestos. Asbestos, indeed, has long been known, and its indestructible nature has pointed it out as an invaluable material for not a few purposes. But, unless we are much misinformed, the industrial use of asbestos is about to receive a very remarkable development. A mountain or rock of pure asbestos has been discovered in the United States, and purchased by an English proprietor. Hydraulic machinery has been provided for the crushing of this rock between rollers; but the result of the crushing process is not dust or grit, but natural fibres, such being the intimate structure of the rock itself. These imperishable mineral fibres are treated much like the fibres of animal or vegetable origin, wool, silk, and cotton. They are spun into cords, they are woven into cloths, and, in fact, assume the position of a new textile material. Already we are told that curtains of asbestos cloth are provided, or are in course of provision, for theatres. The utility of such a screen, if dropped between the stage and the auditorium, in case of any alarm from fire is obvious, being, in fact, equal in exclusive power to an iron screen or blind, without the ponderous and unmanageable weight of the latter.

Again, regarded from the *Builder's* point of view, sash-lines that can neither rot, fray, nor perish in any other manner, form a desideratum of which we have little doubt that the trade will largely avail themselves. The not inconsiderable number of accidents, and the very great amount of inconvenience and of cost, arising from broken sash-lines, may thus be removed from our host of petty troubles. Most unexpected to ourselves,—while far from being of the most trifling importance,—is the use of asbestos, in the form of a kind of mineral tow, for the packing the glands of steam engines; a service in which the material is said to show itself both convenient and imperishable.

That side by side with, or following in close sequence after, these two new gifts to industry, are many more inventions in a more or less ripe state of advance, we can hardly doubt. With each new material, new forms will insensibly make their appearance; and there is thus good reason to anticipate that the influence of the change may extend itself to the elevations of the architect, as well as to the structural outlines of the engineer. Our planet is a world of change, but the changes in its physical condition, in so far as they are effected by man, that have already taken place within our own century are probably greater in amount than the sum of those contained in the whole range of antecedent history. And of these changes the cases of steel, of aluminium, and of asbestos appear to us to prove that we now witness only the commencement.

By a coincidence which is almost startling in its aptness, the foregoing lines were written (at a distance of some 150 miles from London) at, or very shortly before, the hour when the outburst of that destructive element as to which we have so often to bewail the want of ready means of extinction swept before it the Alhambra Theatre, as commented upon in our number of the 9th inst. (p. 761). The usual lamentations, the usual wonder, the usual want of any practical lesson taught by the fierce destruction, were resounding over England the next morning. Is it always to be thus? Are we always to give testimony that we are descendants of a people who might have been appropriately reigned over by Ethelred the Unready? or, at least, into whose habits unreadiness enters as a main and dominant element? In the present case there were, we are told, a fireman on the premises. Of what use a fireman was supposed to be on the premises if he were not also a watchman,—that is to say, a man properly paid for wakefulness and activity when others sleep, which is the time when long-smouldering combustion usually bursts into flame,—we are at a loss to understand. It was possibly one of those compromises between the two antagonistic prudences,—the prudence of the pocket and the prudence of keeping up appearances, or at least descriptions, to the public, from which misfortune is pretty sure to result. Visitors might feel reassured at being told there is a fireman on the premises. But if they are not told at the same time "And he is on the watch, or in some way engaged by day, and has to rest, like the remainder of us, by night," the announcement of the presence of such an officer is hardly of that definite nature which perfect candour would demand. So it is, however, and so it always is. It is just the one little thing that is unexpectedly out of order that is usually the cause of all destructive fires. Crystal

Palace, Alexandra Palace, Ring Theatre: how many more conflagrations can we recall that were only just not prevented?

The remarks that we just made on asbestos thus assume a new importance. True, this was not a case in which an asbestos curtain, or an iron shutter, or any thing but a curtain of water (such as may be witnessed in the quaint old Palace of Cintra), would have saved the building. But does it not seem that we have in this fierce fire but one more of those stern lessons which ought to teach us that buildings where many human beings are in the habit of congregating, under circumstances which would render an alarm of fire as fatal as an outbreak of fire, ought to be composed of incombustible material?

We are not about, at this moment, to express any opinion as to the value of this or the other process for rendering wood incombustible. It is enough to say that there are processes known to science which profess to attain this end, and further, that if they do not actually attain it, it is high time that better means of preservation should be invented. One way or another, we will not allow ourselves to doubt, wood can be rendered incombustible by the chemist, and when to this consideration we add that which ensues from our preceding remarks, to wit, that drapery of all kinds can be so produced as to be not only non-inflammable, or non-combustible, but absolutely indestructible by fire, what excuse is there for future catastrophes in church or theatre, stately mansion or rich museum? Our readers may remember,—alas! it is many years since,—the start that was given to fireproof warehouses. The plan, if we remember rightly, was protected by a patent. The form in which it is most familiar to our memory is that of a building enclosed with stone or brick walls, in which the floors were supported by cast-iron columns, and consisted of cast-iron girders, with brick arches in cement, turned between them. Cold and stern these buildings looked, no doubt, but the stranger who entered them when nearly finished would be apt to say, "At least, they are incombustible." So, no doubt, they were. But incombustibility,—that is to say unfitness to become supporters of combustion,—is a very different thing from indestructibility by fire. And thus when, under the supposed protection of incombustible roofs and floors, great warehouses were filled with oil, tallow, petroleum, wood, or other combustible materials, it was not the building, but its contents, that burned, on the fall of a careless spark. The building acted as a kiln. And under a fierce heat cast-iron cracks, especially if water is thrown on it; stone cracks; bricks crumble, and the destruction of the kiln itself completes that of its contents. And thus, not without some reason, the name of a fireproof building has fallen quite deservedly into disrepute.

Far different is the case in a theatre or a church. There the only combustible materials, except such as form part of the structure, are the clothes,—we might almost say the persons,—of the frequenters. In these there lurks no danger of spontaneous combustion, of ready catching fire from a spark, or of any of those numerous and often mysterious causes that lead to the inflammation of inflammable stores. Here the source of danger, then, lies in the building itself, and more especially in the linings and decorations. A theatre or church built of stone, brick, and iron, in which, if wood is introduced, it is in the form of those masses which, whether vertical or horizontal, are less destructible by fire than hollow cast-iron columns or delicately-calculated girders, will be, in itself, indestructible, provided that lining, fittings, seats, curtains, and decorations, are made of indestructible materials. Without, at this moment, assuming the responsibility of sponsors for *Carton Pierre*, we may mention that as a decorative material which at least claims to be uninflammable. Of lithicised wood, or by whatever name the precautionary treatment of wood may be called, we have just spoken. Here comes in asbestos to complete all that is needful for decoration. Is there any danger of destructive fire breaking out in a theatre or church laid down on these lines? And, if not, is it too much to demand that legislative sanction should be appealed to, and that the building, the fitting up, and the frequentation of buildings that now too frequently act as fire-traps, panic-traps, and death-traps, should be sternly and completely prohibited? What is the good of Building Acts, and inspectors, and the whole machinery in which we put our trust, if it do not, in the first place, grapple with the question,—"Shall buildings, that may prove the source of such frightful catastrophes, be suffered to rear their roofs in what calls itself a civilised country?"

We spoke a few paragraphs back of coincidence. Little did we think, while writing these words, that at the very moment thirty fire-engines were playing on the scene of the most terrific fire that has for a long time been witnessed in London,—a fire which at one time seemed as if it were the commencement of a sweeping destruction like that of the Great Fire of 1666. The description of the scene as given by an eye-witness in the columns of the *Morning Post*, is at once graphic and awe-striking, to the verge of sublimity. The fire seems wholly to have obtained the mastery,—so much so, indeed, that the quantity of water poured on the blazing mass from the engines seemed to have no effect on the flames. The case was precisely one of the kind in which the buildings acted as kilns, ministering a draught to the blazing materials within them, until kiln and contents were overwhelmed in a common destruction. How or why the fire was ultimately got under seems as yet unexplained, but that the utmost gratitude is due to the firemen there is no reason to doubt. One large brick building, unconnected structurally with the burning mass, was attacked by radiant heat and flying sparks, and, in spite of a good supply of water, finally succumbed to the attack from without. A case of this kind, which we take to be rare, if not almost without precedent, shows how tremendous was the heat of the combustion, and how vain are our best appliances, steam-pumps, fire brigades, and what not, to oppose the destructive element when once it has attained a certain fury. Had the wind been high and steady we apprehend that nothing but an extensive demolition of neighbouring buildings by gunpowder could have arrested the devouring progress of the flames.

"The extremely combustible nature of the stock which filled both warehouses," says the eye-witness before referred to, "supplied enough fuel to keep the interior in one tremendous blaze." The fire "furnished a spectacle such as few people are likely to see twice. No words can adequately describe its terrific grandeur. . . . . The eye saw nothing but an enormous sheet of flame swallowing up everything as it rose in mighty volume to the sky. The windows of the basement were furnished with iron bars, through which an artificially-created draught rushed and roared, just as it does through the furnace of a foundry, or of a great steam ship. The idea most forcibly conveyed to the mind by this sight was that of irresistible power. The copious streams of water incessantly poured on to the front of the building did not produce even the slight effect of darkening its glowing surface."

The above description suggests, among other things, the mischief of the prevailing plan of dispensing with shutters. Not in London alone, but in many of our provincial towns, the time-honoured appliance of the shop-shutter is replaced by plate-glass windows protected by iron bars,—and not unfrequently the gas is left burning all night. How far this may be a protection against burglars may be in doubt. But that in any case of fire the substitution of a glass for a solid wood or iron shield is enough to supply at the critical moment the very draught that turns a casualty into a calamity, we think there cannot be a moment's doubt. As to the police part of the story it is for others to decide. For ourselves, we cannot but see, in these naked temptations to the nightly prowler, an outcome of that miserable spirit of skimping economy which has rendered window-shutters obsolete in our bedrooms. A miserable economy involving great loss, first of warmth,—then of quiet and of sleep. To say that in a closely shuttered apartment nine people out of ten will enjoy more peaceful and unbroken slumber than in the cold and naked room, with, maybe, a Venetian blind, maybe an ordinary linen blind, and perhaps a curtain of some sort behind that, to shut out the cold of night, and the awakening beams of the morning sun, is to say little enough. The value of such a protection to the repose of the brain was adequately regarded by the great Napoleon, whose first care, on entering on any new quarters during his campaigns, was that his bedroom should be so situated or so provided as to be inaccessible to external light, except by desire.

We opine that, as people are always ready to find an excuse for stinginess, it is nothing but the desire of saving that has first banished the bedroom window-shutters, and then replaced the shop-shutters by a contrivance which, in any fire, acts immediately as the flue to a furnace, and we suggest for consideration the propriety of forbidding this kind of encouragement to calamity.

As to the effect of lofty buildings and of buildings of large internal area, unbroken by solid partitions, in increasing an ordinary fire to a terrible conflagration, we think there can be little doubt. We are apt to think that we have made great advances on the small thatched houses of our ancestors. We can well remember, now many years ago, a fire in a Devonshire town, where the houses were thatched, and where the flames crept from roof to roof; but with this facility for the spread of flames there was connected no irresistible march of a great volume of fire, such as that witnessed at Wood-street. The fire more easily spread, but it was also more easily extinguished. Two or three hand-pumps were enough to ensure safety. But with increased command over building materials has come increased size of building. It is impossible to tell what will be the thorough outcome of any great architectural change until it has been thoroughly tested. But a test has been now applied by fire. The stores of a fancy stationer, for such we take the account to indicate,—are, no doubt, combustible enough. But they are by no means so inflammable or so inflammatory as those to which we before referred, tallow and combustible oils. It is matter for consideration whether there should not be some limit fixed, as in the case of gunpowder, to the storing in a town of materials of this nature, and further, whether there should not be a limit imposed as to the size of buildings which, in an urban locality, are used as storehouses or warehouses, determinable with reference to the nature of the articles collected in masses.

One thing is certain. We have of late made great strides in our power of extinguishing fires. Water supply is very generally abundant, and has sufficient pressure very often to throw a good jet at once from a hydrant on to the roof of the neighbouring buildings. Steam fire-engines are made of great power and great handiness. Warnings are given by telegraph. Of our firemen, we have no hesitation in saying that they form the noblest and finest army that the world has ever seen,—an army exposed to little, if any, less danger than the troops of the line, an army that knows no time of peace, no furlough of absolute rest, an army that contends, not in mortal struggle with their fellow men, but in mortal struggle with that terrible element which is either the most obedient and useful slave, or the most ferocious and unsparing tyrant of mankind. But with all these great advances, fires are far more terrible, far more destructive than they were before this great army was organised. Why is this? The architect can answer the question. But it is of little use to answer it, unless it be with the view of adopting measures to prevent the accumulation in cities and towns of combustible materials in such places and in such quarters that, if they do catch fire, the fire is pretty sure to become irresistible.

A NEW LIFE OF RAFFAELLE.

The earnest and hardworking students of Italian art-history, to whom we owe the general "History of Painting in North Italy," and the admirable Life of Titian, Messrs. Crowe and Cavalcaselle, have now turned their attention to the task of tracing out, more completely and exhaustively than has yet been done, the facts of the life of Raphael (we adopt their mode of spelling).* One volume only is as yet before us, for biography produced in the spirit in which Messrs. Crowe and Cava'caselle work is not produced in a day. The scope of this volume, and the manner in which it has been produced, may be stated in the words of the authors in their preface. "They hope to have done something to shed a new light on Raphael's career. In the volume which they now offer to the public, they have shown how they ventured to explore and attempted to illustrate the

* Raphael: his Life and Works; with particular Reference to newly-discovered Records, and an exhaustive Study of extant Drawings and Pictures. By J. A. Crowe and G. B. Cavalcaselle. Vol. I. London: John Murray, 1882.

Period of Raphael's youth, which had hitherto been comparatively neglected. They have tried to prove how he was taught under his father and Perugino; and they have looked at every drawing as well as at every picture to trace the road which led him deviously to fame; they point out, it may be not unerringly, where he copied the antique, where his professional rivals or precursors; how he digested and assimilated after learning the lessons of all the masters of his country. Little or nothing, indeed, has been added to the documentary evidence which has been stored since the days of Vasari, but all the materials in existence have been used, and neither time nor travel has been spared to study personally every example, in whatever part of the world it was deposited."

The present volume only extends, therefore, as far as Raphael's removal to Rome about the age of twenty-four. But one of the most interesting portions of the book is that in which the authors endeavour to throw more light on Raphael's boyhood and the period of learning his art. Though no name is so widely known in connexion with painting as that of Raphael, no reputation so wide-spread and so universally admitted and reverenced, we have for the most part little conception in our minds as to how Raphael grew up and developed his genius. We are most of us in the habit of looking on him as an accomplished fact among great painters; we think of him as the author of the Stanze and the Cartoons and the Transfiguration, without troubling ourselves much to go back in mind to the antecedents of this remarkably complete and perfect artist and inquire whence came he, whence he obtained his almost unequalled power of invention and expression in figures, what was his childhood, and in what light he was known among his contemporaries in the boyish period, before his genius was matured and his fame acquired. That he was a native of a country village who ended his days as the central figure of the artistic world in Rome, or at least holding a place disputed by Michelangelo alone, is the familiar aspect of his life; and of the years between his infancy and maturity, and the manner in which they were passed, we shall never now know very much. But in proportion to the meagre materials for knowledge is the necessity of amassing and making the most of these before they are yet further disintegrated by the action of time.

The first popular idea which the authors find reason to combat or to question is that Raphael was formally and from the first the pupil of Perugino. Raphael's father died when the boy was eleven; the terms of Giovanni Santi's will, in which Raphael Santi was left heir, under the guardianship of his uncle, "tend to prove that Raphael was at Urbino at the time of his father's death," and he had probably begun to learn drawing and painting, as children in the present day would begin to learn to read and write, at a much earlier age than this. "It was not to be expected that he should progress much beyond the simplest elements during the short space of time that elapsed from his first initiation to the death of Santi. But in that short span he received impressions which many years failed to obliterate, and it is curious to observe that as late as the opening of the sixteenth century" (when he was seventeen years of age) "his memory was still stored with typical forms inherited from his father." In his childhood he was "in daily contact with the tools of the painter. He watched the labours of Giovanni at his easel, and saw him send forth to admiring patrons those quaint but characteristic Umbrian altar-pieces in which he depicted the majesty of the Virgin and Child, and the admiration of attendant saints, or the meditative devotion of lay and church men at the Virgin's feet." There seems to have been another and even closer hereditary affinity between the art of father and son; for it would seem, from what the authors tell us, that we are to accept it as a fact that Santi actually made the infant Raphael and his mother the subject of a study executed on the wall of his house, just as Raphael himself studied his Madonnas from the simple nature of a mother and child, such as he might find in his daily walks and persuade within his doors, if necessary, as the model to be subsequently elevated and refined into the divine mother and child.

In questioning the idea of an early apprenticeship to Perugino, and suggesting that Raphael had no other teacher than his father during the lifetime of the latter, the authors, however, do not by any means question the generally-received idea in regard to Raphael's close relation to Perugino, and the influence of the elder painter upon his style, after the death of Giovanni Santi. Perugino, say the authors, had evidently a domicile both at Perugia and at Florence. The history of Raphael's youth between 1494 (the year of his father's death) and 1504 is a blank, which, however, our authors suggest may be filled by circumstantial evidence, and this evidence, the main heads of which are given, leads to the supposition that Perugino, even after the commencement of his labours and his partial residence at Florence, was also much at Perugia, and resided there for tolerably long periods at intervals; so that the regular tuition of Raphael under him was quite possible without the supposition of Raphael having gone to Florence at that time. Concerning the evidence of style in regard to the artistic relation of the two painters, the words of Messrs. Crowe and Cavalcaselle are worth quoting:—

"No pursuit of more absorbing interest can be found than that of following what may be called the trail of a great artist, when, knowing that he passed that way, we still remain uncertain as to the age or direction of the track. At one time the trail looks broad and worn, at other times it becomes a mere scent or vanishes altogether. In Raphael's case, as in that of Masaccio or Palmezzano, a great source of difficulty lies in the frequent diversions caused by deceptive cross scents. Perugino is so like Raphael at one place that we almost doubt the evidence of our senses. Masaccio is so like Masolino that we are lost in a maze of uncertainty. The skill of an expert would be required to tell where Melozzo ends and Palmezzano begins. But though Raphael and Perugino may at one time blend their forms to confound us, there is a time when each of them has his own prominent distinctness. They both ascend in the orbits which nature has created for them. Those orbits cross, and at the point of contact their bodies seem lost in each other. But when they emerge, a curious phenomenon appears. Not only is Raphael Peruginesque, but Perugino is Raphaelesque. The work which Perugino accomplishes from 1499 to 1504 is indelibly stamped with the impress of Raphael's genius. That of Raphael from 1502 to 1504 is equally influenced by Perugino's example. Both reveal a constant interchange of thought. If, however, Raphael was a master practising on his own account in 1502, how did he rise to the eminence from which he already looked down on his contemporaries? If Perugino was Raphaelesque in 1500, how long had he been under this new spell? We can trace Perugino's career from Perugia to Rome and Florence, and observe how steadily, but how gradually, he was influenced by Tuscan example. After 1496 a new element contributes to the manifestation of a change. Raphael's course is that of a retentive and conservative mind, always intent on steady and unbroken progress, ever acquiring, inwardly digesting, and assimilating. Is it possible that his nature before 1502 should have been in contrast with his nature afterwards? Is it not clear that he enjoyed under Perugino a long and uninterrupted course of artistic tending, and that he rose to the station which he occupied in 1502 by measured steps?"

That Raphael, coming as a junior assistant to Perugino, if not as a pupil, should nevertheless have had power enough to influence and, to some extent, transform the style of the older artist, transferring into it his own delicacy of taste and sentiment, is not in itself improbable when we consider how Raphael had contrived to fill all the world with his art before his early death at the age of thirty-seven. Raphael's fame, indeed, and the work he accomplished, form a phenomenon which is quite astounding when we remember the brevity of his life and the youthful period at which his work in earnest had begun. As one of the examples of work by Perugino in the spirit of Raphael, the authors mention the Madonna from Pavia in the National Gallery. "Here, again, are the lakes, the hills, the sparse-leaved trees, and the serene sky; here, too, the Raphaelesque combination of beautiful grouping with youth and strength and delicacy of line, of dreamy depth and brilliant light, and soft luscious colour. In the landscape is a stillness so profound that one listens for the hymn of the seraphs to come down from the sky. The whole picture is so redolent of Raphael, that his name rises involuntarily to our lips, and yet we are still far away from the time when Raphael could have shown such mastery." The conclusion is, that the youthful spirit and new feeling of the pupil had inspired the technically more accomplished master. It is a charming idea, so much so that we dwell upon it, and like to think it true, even if we hardly accept it as certain or proven. Perhaps a little of the sentiment of the description is from the feeling of the writers rather than from what was actually intended in the picture. The "stillness" in the landscape may be rather the result of inability to treat landscape in a more moving and lifelike manner, than of a set purpose of the artist resulting from an inner feeling as to the poetic suitability of such a quiescent treatment. We think this is a probable though a less interesting explanation. But the idea that Perugino, while teaching Raphael technicalities, was dipped into a *fons juventutis* under the influence of his pupil's genius, is a both pleasing and probable idea of their mutual action upon one another.

It is noted as not uninteresting that Perugia stands on high ground whence, at a distance of twenty miles, Florence can be discerned, and young Raphael would have before him the distant sight of the city which was the centre of the greatest Italian painting that had been or was to be. The next step which the authors trace in the history of Raphael's studies is in the fact,—revealed, or at least rendered very probable, by a certain sketch-book preserved at Venice,—that Raphael copied carefully the designs of other painters of the period, including Signorelli and Mantegna. It is suggested that Perugino, who knew every town between Venice and Rome, had great opportunities of collecting drawings, and that his store of collections would not unnaturally be open for the study of his pupils or assistants, who would even be recommended to make copies from them. In the fact of Raphael thus closely studying the works of other painters we have a parallel to the line of study of Mozart, the creative artist who in another line may be most likened to Raphael, who stated in one of his letters that there was not a contemporary composer of any note whose work he had not closely studied; and in Raphael's case, as in his, the result of this eclectic study of other artists of varied manners and styles seems to have been the formation of a style of his own in which all the best qualities of his models were extracted, and assimilated into his own style.

The second chapter goes through a number of miscellaneous works in various places, some of which are known to be, some believed by the authors to be, examples of Raphael's work at this period. The chapter is evidently the result of laborious and careful research, and we must refer the reader to it for further information. In Chapter III. the same history is continued, and among other things the suggestion is made of the co-operation of Raphael with Pinturicchio and Perugino in the painting executed by those artists at Sienna in 1502; and the notes on various sketches by Raphael for the subject of the flight into Egypt, and the alterations which took place in his arrangement of the composition, are of great interest, as is, indeed, the whole of this chapter, which traces step by step some of the stages of Raphael's art from known examples, and attempts to show the various influences, from nature and from contemporary artists, which were more or less affecting his style, though never over-riding his own genius and individuality. The chapter is so full of matter, however, that to give any synopsis which would convey an adequate idea of the nature of the facts successively marshalled before the reader would be almost to reprint great part of the original *in extenso*. It strikes us as curious, it is at least unexpected, that in the commencement of the following chapter, speaking of the "Sposalizio," the authors characterise this picture as one which, though it reveals a capacity for refinement on the style of Perugino, is, nevertheless, one of the designs in which Raphael shows "absolute disinclination" to forget the lessons of his master. This is a conclusion that we must turn over in the mind, to say the least, before we can accept it. That he may, as the authors suggest, have drawn upon Perugino for the general idea of the composition of the subject (one upon which the master had not long before been engaged) is likely enough; but certainly we should have said that the pose and manner of the principal figures in the "Sposalizio" were essentially Raphaelesque.

In this same chapter (IV.) we have some remarks on Raphael as an architect. He and Perugino were not architects, in the strict sense of the word, but they were, in a sense, architects in their pictures, in addition to the practical architectural work which fell to Raphael's lot in a later period of his career. "But Perugino

and Raphael started from different goals. The first acquired from the Florentines the traditions of Brunelleschi; the second was guided, we should think, by the lessons of Bramante." Perugino copied the Florence Baptistery in his picture of the "Delivery of the Keys," and in his "Sposalizio" at Caen he introduced an octagon building with domed porticos. Raphael, say the authors, broke away from his master in the matter of architecture; he made the octagon a sixteen-sided polygon, with a sixteen-sided colonnade, and crowned with a low cupola. This does not seem, however, so much "breaking away from" as developing the architectural idea of Perugino; at least, the transition from an octagon to a sixteen-sided figure is a natural and obvious one. As a matter of fact, however, Raphael's pictorial architecture is not good; it is wanting in breadth and solidity, and these deficiencies are the more conspicuous because there is an evident intention of making something good and probable out of the architecture, but neither Raphael's knowledge of construction, nor the principles of the styles from which he derived his architecture, served him sufficiently for the production of a really satisfactory result. His sketch-books, from the authors' account, appear to show evidence of his having frequently sketched, not only landscapes, but buildings in combination with landscape, and these were sometimes introduced with good effect into his pictures; but when he takes Classic architectural forms, they are generally constructed and made out in a way of his own, not always in accordance with true architectural proportion and stability.

The subject of Raphael as architectural designer is, however, dismissed very briefly by the authors, nor is this element a very prominent one in any part of his artistic career, in spite of his subsequent appointment as architect of St. Peter's. Following his further development as painter, we are called on to notice in the course of a very few pages no less than three other partial and passing phases in the style of Raphael. In his "Three Graces" he was realistic, and made three drawings from the same pretty model, happily grouping them so as to give varied movement, expression, and pose. In his "Apollo and Marsyas" he "worked almost entirely in the spirit of the antique." And immediately following on this we have the account of his going to Florence in consequence of the fame of Angelo's and Da Vinci's large cartoons, and becoming "enthusiastic for the style of Leonardo da Vinci." The quotations given from various maxims of Leonardo, in his tract "De Pittura," are very interesting, and they serve to show how minute and careful were the considerations into which the great painters of that day went in their works. "Temper the sun with a haze which shall interpose like a veil between the object and the luminary. You shall then have breadth of light without excess of shadow." "Never paint foliage when the sun is shining so as to throw light through the transparence of the leaves; for you shall then breed a confusion which an artist ought to entirely avoid." This is very characteristic of the period when figures were the main object of the painter, and landscape only a secondary matter, to be studied so far as was necessary to give effect to figures. The difficulty which Leonardo advises the painter to abstain from encountering is just one which a modern landscape-painter, in earnest about his art, would feel pride and pleasure in meeting and vanquishing; nor does it seem to have occurred to Leonardo what an exquisite effect that is in nature which he advises his reader to avoid trying; it merely occurs to him as tending to create "confusion." He has, it must be admitted, a saving clause on the other side: "Shun, however, the mistake of Botticelli, who thinks that a sponge, moistened with colours, thrown at a panel, will produce a landscape at one stroke:" an instructive sentence for the fashionable adorers of Botticelli. Another precept of Da Vinci the authors find to be decisively followed in some of the portraits by Raphael, that of Maddalena Doni, for instance; though the precise meaning of Da Vinci might be capable of different interpretrations. "If you see a figure standing in a dusky room, and look at it from the outside in the line of the light (?), the shadow will be dark and swimming. Paint that and you will have great relief and great softness." We should question whether this represented the precise meaning of the original, or whether (if it does) Leonardo himself had not used a word carelessly and not exactly conveying his meaning, which, it must be admitted, it would be rather difficult to convey in words, though most of us will understand what it amounts to. The passage illustrates the keen and searching way in which Leonardo regarded the conditions of objects in reference to their capacity for treatment in painting. The authors more especially instance the "Madonna della Cardellino" as exhibiting in detail the results of Leonardo's teaching, in the drapery "with grand simplicity and sweep of fold," and the pyramidal composition, to which the Virgin's face forms both apex and focus. "All the affectation and conventional grace of the Umbrian has vanished, to make room for something better and more refined."

The present volume of the "Raphael" is deficient in one addition, which goes far towards the popularity of a biography of this kind,—it has no illustrations. Perhaps it is intended that these should be added in a future volume, or the authors may have thought that most persons who would appreciate the book would be sufficiently acquainted with Raphael's works to follow the remarks, or would know where to look for drawings and engravings. Even to such, however, facsimiles of some of the more rare class of studies would be of high interest, more so perhaps than to the general reader. The book, however, is not for "the general reader," who will probably not understand its interest, its line of argument, and its deductions. It is a book for those who take art and art-history seriously, as a subject worth careful thought and study. The number of these, in proportion to the mass of readers, has undoubtedly increased of late, and to all these Messrs. Crowe and Cavalcaselle's "Raphael" is a necessity, — a book which their library "cannot be without." We have seen few books of biography containing such an amount of solid information as this. There is no padding in it; every page must be read; and considering the amount of information compressed into it, the book is not only clearly arranged, but remarkably readable; and though the style must necessarily, in such a case, be a little dry, as reading, every now and then it is brightened up by a little outbreak of enthusiasm, just sufficient to show that the writer's heart as well as his head is in the work. In the midst of the more serious details, too, little traits of Raphael's habits in working come out, as in the mention of one of the sketches for the pathetic subject of the Entombment, in the midst of which it seems that "a gayer spirit comes over him, and on the back of his paper he gives in sprightly lines a concert of antique figures, a woman with a harp, a youth playing the viol, and a satyr blowing a trumpet."* In these and other such incidents we seem for the moment to be brought more nearly face to face with that wondrously-endowed worker of the cinquecento period; we come near him and look over his shoulder in his moments of relaxation, and recognise the healthy playful human nature which enabled him to give to his Madonnas that combination of spiritual feeling with human grace and motherly tenderness which we find, in the same balance and completeness, in no other sacred art but that of Raphael.

* One of the Oxford drawings.

PUBLIC WORKS AND BUILDINGS IN LONDON AND SUBURBS,

IN THE SIXTEENTH, SEVENTEENTH, AND EIGHTEENTH CENTURIES.

Among the numerous interesting manuscripts preserved in the Public Record Office we have recently discovered a remarkable and unique series of accounts relating to money expended on the royal palaces and other state buildings and works in and about the metropolis, and other royal seats in the country, such as Windsor Castle, &c. These curious, voluminous, and instructive documents exhibit the materials, quantities, and prices of the articles used; also the workmen's wages per day; and in the case of "task-work," the sum paid for a specific job is duly set forth. These MSS., extending over 300 years, commence in the reign of Queen Elizabeth, and are carried down, year by year (except during the Commonwealth, when they do not appear to have been kept), to the reign of George IV. Our first transcript relates to the Tower of London, in the year 1563-1564, when 153*l.* 10s. 10½d. was incurred for materials and wages, for "repayringe and mendynge of the windowe of freestone in the p'sonnes there; repayringe of floores, and the wharffe at the Iron gate nexte Seynte Katherins and otherwise," viz., for:—

Timber, 12s. the load; quarters, 3 load at 12s.; rafters, 1 load, 12s; quarter-boards 2,506 at 2s. 4d. the hundred (ij^{ml} v^{c}, vj foote at ij^{s} iiij^{d} C.); eves bordes, 1 hundred at 3s.; elm planks at 11s. the load; alder poles, 3 loads at 5s.; laths, 2½ loads at 16s.; billets and talwood, 2 loads at 6s. 8d. Bricks, 15,000: 11,000 at 10s. and 4,000 9s. the thousand; tiles, 28,000: 18,000 at 10s., 10,000 at 9s.; "roufe & hyve tyles" [qy. roof and eve tiles] at 8s. and 8s. 4d. the hundred; tile-pins, 15 bushell, 15s.; lime, 3,400 [cwt.] at 6s. the hundred [qy. cwt.]; hair, 8 quarters at 2s. 8d. the quarter; sand and loam, 38 load at 10d.; lead (cast) 1,400, at 12s. the hundred [cwt.]; solder, 2½ cwt. (cc di.) at 5d. the pound; wax and rosin, 14d.; Spanish oker, 4 dozen, at 4s. the dozen; oil, 4 dozen, at 1s.

Timber at 10s., 11s. 6d., 12s., 13s. 3d., and 14s. the load. Boards of divers sorts, as Ealm boards, "Plaunch boards," quarter-boards, inch-boards, deal boards, and plane boards, provided and bought at the several rates and prices of 4s. 6d.; 3s. 8d., and 4s. the hundred, and at 3s. 4d. the board.

"Quarters and pounchions pvyvid and bought at the sevrall Rates of xij^{s}, xiij^{s} iiij^{d}, and xiiij^{s} the lode bestowed and employed at the Tower of London," &c. Planks at 5s., 5s. 6d., 7s. 6d., and 8s. the hundred. Rafters at 12s. the load. "Jeists" at 11s. and 12s. the load. Waynscots at 5*l.* 10s. and 7*l.* 10s. the hundred. "Tallewood, Bylett, and Fagott, viz., Tallewood, at 2s., 3s. 6d., and 4s. the load. Bylett and Fagott at 7s., 7s. 10d., and 10s. the thousande." Laths at 16s., 18s., and 22s. the load. Hurdles at 5s. and 5s. 6d. the load. Tilepins at 10d. and 12d. the bushel. Poles and masts for scaffolds at 5s. 6d. and 8s. the load. Four ladders cost 14s. 10d. Nails of sundry sorts, viz., "doble tennes," at 10s. 6d. the 1,000; "single tennes" at 5s. 3d.; sixpenny at 3s. 4d.; fourpenny at 2s. 10d.; "Russe nayles at xiiij^{s} the sume" (the lot); the bagg and twopenny nails at 12s. the lot. Iron work, viz., locks and keys, at several prices; hooks, hinges, &c., 5*l.* 19s. 8½d.; baskets, spades, shovels, and other small necessaries, 1*l.* 9s. 8d.; glazing at 6d. the foot, and repairing of glass at 2d. the foot.

The wages were as follow:—Masons at 1s., 11d., 10d., and 9d. per day; carpenters at 1s., 11d., and 10d.; bricklayers and tilers at the same rate; plasterers and plumbers at the same rate; sawyers at 1s. 10d. the couple; pavors, for paving 80 yards, at 2d. the yard; common labourers, 8d.; and "John Swythen, clerke of the checke and Ov^{r}seer of the woorkemen and labourers, xlvj dayes, at x^{d} per diem," 38s. 4d.

Carpenters serving in the said works at the several rates of 8d., 9d., 10d., and 12d.,—664*l.* 4s.

Joiners at 9d., 10d., 11d., and 12d.,—85*l.* 8s. 6d.

Masons at 9d., 10d., 11d., and 12d.,—98*l.* 7s. 8d.

Bricklayers and tilers at 8d., 9d., 10d., 11d., and 1s.,—419*l.* 0s. 8d.

Sawyers at 1s. 8d. and 1s. 10d.—174*l.* 8s. 8d.

Plasterers at 9d., 11d., and 12d.,—105*l.* 18s. 1½d.

Plumbers at 9d., 10d., 11d., and 12d.,—112*l.* 5s. 8d.

Founders at 8d., 10d., and 11d.,—1*l.* 2s. 2d.

Matlayers, 8d., 9d., 10d., & 11d.,—22*l.* 15s. 10d.

Painters "sarvinge in the said workes by greate, viz., at West'm, for payntinge of my dozen Treyne platters at iij^{li} the pece, xij^{s}, and for payntinge the fountayne at Windsor Castell, by greate,* xx^{li}, amountinge in the hole to xx^{li} xij^{s},"—20*l.* 12s.

Scaffolders at 8d., 9d., and 10d.,—8*l.* 3s. 2d.

Sklaters (qy. slaters) at 9d. and 11d.,—7s.

Smiths at 8d. and 10d.,—2*l.* 8s. 8d.

Carvers and cutters in stone and wood at 8d.,—9*l.* 10s. 2d.

Pavors "for the waseges of 10d. the day as after the rate of 2d. the yard by reate,"—46*l.* 5s. 7d.

Limeburners at 9d and 11d.,—30*l.* 12s. 8d.

Butmakers at 8d. and 11d. the day "in mendynge and makinge buttes at Windsor Castell, amountyng in the hole to 1*l.* 14s. 10d.

Mesers-cowrers at 9d., 10d., 11d., and 12d.,—20*l.* 5s. 10d.

Gardeners at 3d. and 12d.,—107*l.* 16s. 4d.

The surveyor of the works and buildings was allowed 6s. 6d. a day for his travelling

* To work *by great* is to work by quantity instead of b day. What are "Treyne platters"?

expenses by land and water; the comptroller, the master carpenter, the master plasterer, and the master plumber received 2s. a day for the same purposes.

The following account of works and buildings done in, upon, and about Whitehall, "*alias* the New Palace of Westminster, and divers other places belonging or neigh adjoining thereunto," during the year 1582-1583, exhibits the cost of building materials and workmanship in the metropolis 300 years ago. On this occasion the sum of 572*l.* 2s. 4d. was expended upon those buildings for "taking up and laying again with Mebrow deals the terrace, about the preaching-place; mending a great bay window in the Lord Chamberlain's lodgings, making a door in the Lord Treasurer's lodgings, and a new partition in the standing wardrobe, mending the gallery assigned to the phisicians for their medicine-room, and repairing the two pair of stairs belonging to the same; as also for new working of a frame to enlarge Mr. Henry Sackford's and the Clerk of the Spiceries lodgings"; making and setting up rafters for a shed on the gallery next the privy bridge; making a new cistern-frame in the well larder, enlarging the office of the chandlery, together with making new doors, and a window for the same, new joisting and bording the roof over the porter's lodge, mending the great gate towards bakehouse, setting up a pole 20 ft. long in Scotland-yard, repairing a well of the crane there, as also of the store-house in the timber-yard, laying new planks and fastening the old upon Westminster Hall bridge; making a new chimney in Mr. Sackford's lodgings, and a chimney and furnace in the chandlery, rising a new chimney in Mr. Field's chamber, mending sundry bake-hearth, ranges and ovens; "laieinge of divers ground silles, underpinninge of ground plate"; paving not only of the gallery in the passage to the Earl of Leicester's lodgings, but also of the boiling-house and of divers kitchens where need was; working and setting of old and new crest, as well in sundry battlements, as also in other places about the house fallen into decay; taking up the fountain-steps in the garden, laying them again, and filling up the joints with cement; hewing a hearthstone grate, and sluice for the bridge at the entrance in St. James's-fields; new slating the side of the hall towards the Thames, and repairing the other side in places needful; lathing, ripping, and tiling in divers rooms, as the privy lodgings, the silk house, the gallery towards the park; the Earl of Newcastle's lodgings, the side of the roof next the porter's lodge, the still-house, the postries, the workhouse in the tilt-yard, and at St. Stephen's in the lodgings of the officers of receipt; covering with lead the roof on the porter's lodge, making two new pipes of lead for conveyance of water from the town, mending the lantern in the hall, the leads on the standing wardrobe, and certain leaden pipes in the orchard; soldering faults and frets not only in divers places of the said house, but also on the leads in the St. Stephen's, and the leads and gutters at St. James's, and stopping pipes there, cleansing the sluice in Scotland-yard, and divers sinks and valves about the house; new lathing a ceiling near the jewel-house; repairing, lathing, and laying divers walls near the same; new matting the Lord Chamberlain's, the Lord Admiral's, the Earl of Warwick's, Mr. Middlemore's, Mr. Hawarder's, and Mr. Chawoorthe's lodgings, together with mending and piecing old mats in sundry loopings about the same court, and for the attendance of sundry artificers, officers, and others, with divers necessary provisions for the performance of the said works, which in their several natures, quantities, and prices are expressed in money and form following, viz.:—

Timber, 54½ loads, 9 ft., viz.:—27 loads, 4 ft., at 10s. the load; 10 loads, 17 ft., at 11s.; 2 loads, 20 ft., at 13s. 4d.; 5 loads, 25 ft., at 14s.; 6½ loads, 4 ft., at 25s.; and 2 loads at 16s. Rafters, 12 loads, viz.:—7 loads at 12s., 3½ loads at 13s. 4d., and 1 load, with carriage, 14s. Quarters, 6½ loads at 12s. Joists, 2½ loads at 12s. Planks of breadth, "ij. at vij^{s}. the piece (beside one load spente of y^{e} Remayne)." Boards, 5,625 ft. ("v^{m} vj^{c} xxv^{foote}"), viz.:—4,075 ft., at 3s. 4d. the hundred; 1,550 ft., at 4s. Deals, or "mebrow deale boordes," 830 ft., viz.:—800 at 6*l.* the 100, and 30 at 12d. each. "Dressers of beache," 1, 7s. Talwood, 6 loads at 4s. Billets, viz.:—13,500 at 6s. 8d. the 1,000, and 1,404 at 10s. the 1,000. One lever, 16d. Hurdles, 4 dozen at 4s. per dozen. Bricks, 32,500, at 10s. per thousand. Tiles, 24,000, viz.:—23,500, at 10s. per thousand, and 500 after, 12s. the thousand. Roof-tiles, 350, at 10s. per hundred. Slates, 25,000, viz.:—5,000 at 10s. the thousand, with carriage, and 20,000 at 9s. ditto. Laths, 6½ loads, viz.:—1½ load at 20s., 5 loads at 17s. per load. Lime, 3,500 (cwt.) at 6s. the cwt. Loam, 17 loads at 8d. the load. Plaster of Paris, 2 tons, at 12s. per ton. Hair, "xxij bwz. at vj^{s} the bwz." (qy. bushel). Ragstone, 2 loads at 3s. the load. Rigatestone, 4½ tons and 2 ft., viz.:—2½ tons at 12s. 10d., and 2 tons at 14s., per ton. Watertable stone, 3 ft., at 10d. per foot. Wrought-face stone, 8 ft., at 12d. per foot, with carriage. Mats, 40 dozen, at 4s. the dozen. Packthread, 16 lb., at 8d. per lb., and for brown ditto, 10d. Soder, viz.:—"cc. qr^{s} xiiij^{lb} at vj^{d} y^{e} lb., vj^{s} xiijst, and for ffounders* Soather and ciment vj^{s} viij^{d}, in all vj^{li} xix^{s} viij^{d}" (233 lb. at 6d. per lb. = 6*l.* 13s.). Lead, "iiij^{lb} ix^{c} qr. v^{lb}" (4,933 lb.), at 12s. per cwt. Coals, 30 casks, viz.:—25 casks at 4s., and 5 ditto at 8s., per cask. Sand, 4 loads, at 6s. per load. Clay, 4 loads, at 10s. per load. Gravel, 1 load, 8d. Hay, 2 trusses for 16d. Nails, of sundry sorts and price, 19*l.* 12s. 0½d. Brooms, of divers scantling, 16*l.* 2s. 8d. Bast rope, 3 pieces, at 15d. the piece. Canvas, 10 ells, at 1s. 2d. the ell. Tape, 1 ell, 2s. Water-tubes, 2, viz.:—1, 2s., and 1, 2s. 6d. Hogsheads, 2, at 16d. each. Hoops, 18, at 2d. each. Pales, 8, at 6d. each; 1 file, 10d.; 1 hammer, 12d.; 1 pair shears, 10d.; 3 shovels, at 8d. each; 2½ dozen baskets, 2s. 4d. per dozen; 1 lantern, 2s.

Joiners' work, viz., a "wainscoat cubbord" to keep books, 14s., a small wainscot casement 16d., another "wainscote cubbord" for the office 8s. Ironwork, viz., plate-locks, staples, keys, sockets, "crosse-garnetts," bolts, hooks, casements, together with sharpening, and "battering of tools," and attendance, 14*l.* 4s. 1d. Brasswork, viz., one brass cock at the Star Chambers, 3s. 6d.; one cock and a masher in a cistern there, 6s.; 3 cocks in the removing and withdrawing chambers, viz., 1, 3s. 4d., 2 at 3s. 6d., and 1 at 4s. Glass and glazing, viz., new glass at 6d. the foot, new setting in and leading old glass at 3d. the foot, mending panes and casements at 4d. each, and setting in quarrells at 6d. each.† And several small necessaries, viz., 1 buckram bag 20d., 5lb. of wax at 8d. per lb., 3lb. rozin at 6d. per lb., 8 buz. of slate-pins at 3s. 10d. per buz., 6 buz. and one peck of tile-pins at 12d. per buz. [The abbreviation "buz." in this instance apparently means bushel.] 2 doz. wodden buttons at 8d. per dozen, 8 links at 8d. each, 29lb. of candles at 3d. per lb., 1 cast of counters 20d., writing-tables 1 pair 2s., 3 reams of paper at 8s. per ream, pay-books 12s. 6d., 1 "pottle" of ink 3s. 4d., 1 brass dust-box 4s. 6d., 1 lb. of pin-dust at 12d. per lb., and for leather 6d.

Workmen's daily wages included, carpenters at 12d., "and prentices" at 10d., joiners at 12d., masons at 12d., tilers and bricklayers at 12d., slaters at 12d., plumbers at 12d., plasterers at 12, "and their prentices" at 8d., matlayers at 12d., tentmakers at 12d., "mazerskourers" at 12d., labourers at 8d., and sawers at 22d. the couple. Painting, viz., to George Gower ("s^{r}iant"), sergeant painter, for painting and guilding a new lion and the old "Phane," and the Crown supported by the said lion in oil colours to garnish the lantern over the hall 4*l.* Pruveyors, Griffith Jones 16d. and 12d. per day. Storekeepers, viz., John Whitwell of his pains in taking the note of the receipt and delivery of the said provisions at 12d. per day and John Marshall of his like service at the same rate. Clerks, viz., John Marshall, John Thorpe, and Mathew Swetzer, for ingrossing the pay and signed books and attending on the office, at 12d. each per day.

Taskwork.—Henry Deacon, sergeant plumber, for casting lead, was paid at the rate of 20d. per cwt. Richard Dickson, carver, "for portraying and making of a new lion of iij foote highe for the Lanterne over the hall," 20s. William Philipps, turner, for turning 18 balusters at 4d. each; Francis Rench and other slaters, in part payment, for lathing and ripping the hall, 5*l.*, and to them, in full payment, for finishing the said work, 11*l.* Richard Steppes, pavor, for 51 yards of ragstone paving in the Lord Chamberlain's lodgings, at 2d. the yard; Henry Holton for 12 yards of paving work at 2½d. the yard. Thomas Graves, surveyor of her Majesty's works, for his attendance, diet, and boat-hire and riding charges, at 4s. per day; and to the Comptroller of the said works, 2s. per day.

Turning to the account of the works and buildings at the Banqueting-house, the cost of materials, wages, &c., is much the same as above transcribed. Thus, John Wattingley, joiner, for "four great wainscote doors 7 ft. high and 4 ft. 2 in. broad, being whole wainscote thickness," was paid for them 25s. each. George Gower, sergeant painter, for laying all the windows and joint-pillars with white lead, oil, and russet, consisting of 504½ yards, was paid at the rate of 16d. per yard. "As also for laieng y^{e} armes ou^{r} ye porch in oil mixte wth white & blacke, cont' xij yardes di. at xiij^{d} y^{e} yarde, xvj^{s} viij^{d}." For laying sixty-three great casements in white lead and oil 40s., and for painting all the outside walls of the Banqueting-house, embracing 868 square yards, cost over the said work after the perfecting thereof, at 9½d. the yard, 34*l.* 15s. 2d.

Upon Westminster Hall 10*l.* 1s. 6d. was laid out for working new corbel stone for the more safe supporting the closet of wainscot near the King's Bench, on the side towards St. Stephen's, somewhat inclining to ruin, flooring the said closet and boarding it again, "as also takinge downe and yotting with crampins the grate betwixt Scotland-yarde and Charinge-crosse," viz., 100 ft. of boards, 3s. 4d., Canestone (qy. Caen); 1½ ton, 11 ft., at 15s. per ton; 1 cwt. lime, 6s.; 3 load of sand, 16d.; nails of divers price, 5s. 8d.; 15 crampins of iron at 4d. each; and carriage of boards, stones, and scaffolding stuff, 6s. 4d. Wages of masons and carpenters were at the rate of 12d. per day; scaffolders got 10d., and labourers 8d. a day. Richard Dixson, carver, for carving the royal arms in stone, received 13s.

In St. Stephen's 2*l.* 5s. 1d. was expended in making a new way for the Lord Treasurer to pass to the Court of Wards, viz., for framing a great new door next the Town Court-house, with necessary posts to it, and making two bridges, one in the said Court-house, the other in the said yard at St. Stephen's, as also posts and rails about the bridge, "and of a greate shuttinge of boordes with two leaves"; 2*l.* 9s. 8d. was also disbursed for work and labour done in the said Court-house, for making uew windows, shutters, and doors for the better preservation of the wines kept therein, viz., 300 ft. of boards at 3s. 4d. the 100; nails of divers price, 6s. 4d.; 6 pairs of hinges, 1 great plate lock with vice, a close box for the door, and 7 black bolts with keepers and staples, cost 31s. 8d.; 8d. was paid for land carriage of timber stuff, and for the wages of a carpenter at 1s. a day, 11s.

In St. James's Park 15*l.* 4s. was expended for certain young elms, viz., for searching in divers places about the country, and conveying them thither, to be set for a walk to be made for her Majesty, viz., for purchase of 300 young elm trees at 7*l.* the 100, and labourers for their travel in seeking them about the country, 10s.

At Queen Elizabeth's favourite seat,—the royal Palace at Greenwich,—the large sum of 3,151*l.* 6s. 2¾d. was laid out in works and buildings done there during the year 1582-83. The cost of the materials, workmanship, &c., are much the same as those above mentioned, and do not call for a detailed transcription. It may, however, be noted that two new windows were made in the Queen's apartments "for her Majesty's better viewe into the orchard"; followed by a long entry for "new mattinge not onlie of the preivie Closset, the privie Chambr^{s}, y^{e} standinge bead chamber, and the gallerie nexte adjoyninge, but also of the lorde Treasurers, y^{e} Earle of Leicesters, the Earle of Warwicks, y^{e} lorde Howardes, M^{r}. Vice-Chamblanes, M^{r}. Comptrollers, M^{r}. Secretaries, and the Gromes of the Privie Chambers lodgings, dius'e other aboute y^{e} house, together with taking up, mendinge, clensinge, and laieng againe sondrie decaied matts, both in her Ma^{ts}. and in noblemens and officers lodgings and roomes, with diverse other chardgs incident to the said woorks." A subsequent entry shows that 134 dozen of mats cost 4s. a dozen, and that 735 yards of "fyne matts" at 8d. per yard, amounted under this head to 48*l.* 4s. 9d. Three purveyors,—Walter Jennings, Griffith Jones, and Thomas English,—had respectively 17½d. 16d., and 15d. per day. For taskwork, William Tucker, carpenter, obtained 6*l.* for timber and

* Fodder, a weight for lead or other metals, usually about 2,400 lb.

† *Quarrells.*—A square of window-glass, properly one placed diagonally; anciently, a diamond-shaped pane of glass. Hence the cant term, *quarrel-picker*, a glazier. The word was applied to several articles of a square shape, and is still in use.

workmanship of six new "cleare storie windowes"; and John Atsilde, carpenter, for "making clearstory windows, boaring, joisting, and quartering divers floors and partitions, and making stairs," received 33*l.* 13s. 4d. William Phillipps, turner, for turning nine great posts for the terrace at 3s. 8d. each, and for turning 105 balusters at 5d., received 4*l.* 6s. 1d. William Kirwin and John Ashton were paid 3d. per foot for laying 400 ft. of old stone in the kitchen and in the Lord Treasurer's Walk; "as also for clensing of lights, and y^e^ stones of the Fountain," 4*l.* 19s. 6d. George Gower, sergeant painter, received 287*l.* 13s. 11d. "for laying of all Timber windows and their barres aboute her Ma^tie^ and Noblemen's lodgings, in white leade and oile, for Moulding of Cornisches, Archtraves, gable-ends, Porches, dores, Balasters, Raills, Peri-stalles, and boultelles in the Conduit-courte, and two other Courts, and in the Hall, conteyninge M^l^ vij^c^ vij yardes di at xvj^d^ the yarde [1,707½ yards at 16d. per yard]; and for laieing of other clearestorie windowes, upright barres, peristalles, trimm piece, peraments, casementes, and lettice, &c., partelie with white leade and oile, in distemp', and partlie w^th^ Russet, in all ciiij^xx^ vij^li^ xiij^s^ xj^d^." John Ashton and two other pavors were paid at the rate of 2d. per yard for paving the Conduit-court and other places thereabouts with ragstone. And William Palmer, founder, for casting four brazen pullies and supplying 20 lb. of new brass, received 16s.

CROYDON PALACE AND THE ARCHBISHOPS OF CANTERBURY.

"Feci quod potui; potui quod, Christe, dedisti."

As the current lease from the Ecclesiastical Commissioners will shortly expire, the inhabitants of Croydon intend to purchase the remains of the ancient archiepiscopal palace and devote them to some philanthropic project, in memory of the late Primate.

Many antiquaries would identify this town with the Noviomagus of the Romans. It is certain that to the end of the last century traces were visible at Broad Green of the Roman or British road from Arundel to London.* Cited in the book of Domesday as Croindone, containing twenty plough lands, the manor belonged to Lanfranc soon after the Conquest, and has been ever since annexed to the Metropolitical See. Under the Commonwealth, however, it was let to the Earl of Nottingham for an annual rent of 40*l.*, and then to Sir William Brereton, Colonel-General of the Cheshire forces, who being a notorious *gourmand*, turned the then chapel into a kitchen.† The manor was valued *temp.* King Edward the Confessor at 12*l.* per annum, and in the Conqueror's time at 27*l.* to the Archbishop, and 10*l.* 10s. to his men. In the Parliamentary survey of the year 1646, its yearly value is scheduled as 274*l.* 19s. 9½d., exclusive of the timber. Croydon Park, of which William Walworth was once keeper, had been given to King Henry VIII., by Cranmer, but was returned to him by King Edward VI.

The palace or manorial house‡ formed for several generations a residence of the archbishops of Canterbury, of whom but few have not dated some of their public acts therefrom. Here in great solemnity Courtenay received his pall (1381), and here Arundel, Chicheley, and Stafford, his successors, in turn chiefly lived. A prisoner in England, King James I. of Scotland dates from Croydon, *anno* 1412, a charter of the barony of Drumlanrig to Sir William Douglas, he being there in Arundel's custody during that prelate's second tenure of office. Parker, so celebrated for his learning and virtues, entertained Queen Elizabeth and her court for seven days at Croydon. It was on this occasion that the queen, taking leave of the first Protestant archbishop, and acknowledging his hospitality, turned to Mrs. Parker with the words:—"Madam I may not call you, mistress I am loath to call you, but I thank you for your good cheer." A similar visit was contemplated, if not actually accomplished the next year. A memorandum exists of the allotment of their several chambers, in many cases their "old lodgings" or "where he was," to the lord chamberlain, the lord treasurer, the lady of Warwick, the "gentleman hussers," the "physycyons," the "Queen's wayghters," the "Queene's robes," the groomporter, &c. It is amusing to read of the perplexities due to the expected arrivals of my lady of Oxford, Mr. Hatton, and my lady Carewe (from Beddington), for whom no rooms with chimneys could be assigned.* Whitgift, whom she used to call her "little black husband," entertained the Queen frequently, the last time she dined with him here being within three years of her death.† Sir Christopher Hatton was made Lord High Chancellor at Croydon in 1587, Whitgift having declined that honour. This archbishop, together with Tenison and others, was a munificent benefactor to the town. He founded during his lifetime the schoolhouse and hospital to which Dr. Tait referred in one of the last of his recorded utterances. It is a good, though plain, Elizabethan building, at the north-eastern corner of the High and George streets. In the chapel are preserved the founder's portrait, inscribed with the quatrain of which the opening line stands at the head of this article, with one said to be of his daughter, and a curious representation of the "Dance of Death." The hospital possesses three old wooden cups, whereof one, with a capacity of three pints, bears the legend:—"What, sirrah! hold thy pease, thirst satisfied cease." Abbot, who seldom left Croydon, gave great offence by forbidding the reading in the church of the proclamation for sanctioning certain sports and pastimes on the Lord's Day; he scandalised the clergy in accidentally killing a keeper when hunting at Bramshill Park (1621). Clarendon describes him as "a man of very morose manners and sour aspect, which in that time was called gravity." After Laud's execution the see was vacant for a space of sixteen years. Juxon, who must ever be remembered as the repository of the last injunction of Charles I., was appointed thereto at the return of King Charles II. He carried out many repairs in the residence, and rebuilt the chapel that Brereton had profaned. His successors continued to live here until the translation of Hutton from York in the year 1757. Twenty-three years later, during Cornwallis's primacy, the untenanted buildings were sold for 2,520*l.* to Sir Abraham Pitches, knight, and the proceeds applied towards the cost of Westminster Bridge. Stafford's hall (of date 1443), the guard-chamber (built by Arundel), and other premises, except the chapel, have lately been in the occupation of a bleacher, whose drying-ground is the garden and vineyard, of which a record exists *temp.* Edward II.‡

In the year 1808 Archbishop Manners Sutton purchased Addington Manor for a summer residence. This his successor, Howley, adopted as his chief abode, laying out the present park because he found that his own garden at Lambeth suffered so much from the neighbouring kilns and factories. Of the two ancient manors at Addington (antiq. Edintoune), that which passed to the archbishops was known as Aguillon's or Bardolph's. At the Conqueror's survey it was taxed at eight hides, and held by Tecelin, the king's cook, on grand serjeantry, to be enjoyed by the tenure of presenting to the sovereign upon his coronation a dish or mess of gyron,—when marrow was added thereto, maupyrgernon,—a custom observed to a comparatively recent age. Sir Robert Aguillon received a patent in the 54th Henry III., to fortify and embattle his house at Addington. That house, on Castle Hill, was pulled down and a second built at the foot of the hill, bearing the inscription,—

> "In fourteen hundred and none
> Here was neither stick nor stone;
> In fourteen hundred and three
> The goodly building which you see."

This again made way, about 100 years ago, for the present manor-house, which embodies the chapel, library, and other rooms added by Archbishop Howley. A fine avenue leads to the site of the former structure.

The disastrous fire of 1867 destroyed nearly all the monuments in old Croydon church. These comprised those of Archbishops Grindal (1583) and Whitgift (1604), with the fine tomb and recumbent figure, in full canonicals, of Sheldon (1677),—the work of two obscure English artists, "Latham, the City architect, and Bonne." Relics of the two former monuments lie in a vault beneath the organ. In this church, which, with the exception of the tower, was rebuilt by the late Sir G. Scott, on its former plan, were buried Archbishops Wake (1737), Potter (1747), and Herring (1757), each having held the see for ten years. Herring expressly forbade the erection of any monument above his grave. Abbot died at Croydon on the 4th of August, 1633, but in compliance with his will was buried at Guildford.

* See "Archæologia," vol. ix., p. 104.

† See "Mysteries of the Good Old Cause," a 12mo. pamphlet, 1663.

‡ The term "Palace" strictly appertained to a bishop's residence within his own cathedral city; all others were styled "houses." Lambeth Palace was known as Lambeth House until the present century. Letters of Juxon are extant, dated from his palace in London and his house at Fulham.

* The paper is bound with a MS. history of Croydon in the Lambeth Palace Library. It is signed by Bowyer, gentleman of the black rod, and is entitled, "Lodgings at Croydon, the Busshope of Canterbury's House, bestowed as followeth [Here follow the names with their respective apartments.] the 19th of Maye, 1574."

† See "Sydney State Papers," vol. ii., p. 210.

‡ In Hone's "Year Book" for 1845 will be found an interesting engraving of a carved stone escutcheon and canopy from the eastern wall of the palace which fell to pieces in June of the preceding year. The shield, supported by winged and crowned figures, bears the arms party per pale of Edward the Confessor dexter and sinister quarterly those of France and England.

CRITICAL COLUMN.

THE NEW ARMY AND NAVY HOTEL, VICTORIA-STREET, WESTMINSTER.

This striking erection, which has, no doubt, been noticed by many engaged in the profession, is not a bad subject with which to open the critical column. Any one passing down Victoria-street, and having an eye to architecture, will have his attention arrested by the manifest peculiarities of this design. Its main characteristic is power in the composition, joined to boldness, extravagance, and sensationalism in the detail. As a composition, this design has great merit. The bold entrance-doorway, the large and massive stone angle quoins, the windows down the side, the dormers, and main cornice treatment, all work together to an effective and well-balanced whole. The projecting bays are well conceived compositionally; they balance the very massive doorway treatment; the same applies to the stone treatment up to the first-floor cornice, by which the colour is carried uniform around a series of features meant to combine to a united artistic effect. Any introduction of brick in the lower portions of the design would compositionally have been a great mistake, solely on account of the colour contrast. On the side elevation, where brick has been introduced presumably for reasons of cost, there is no objection to its use, and the idea of the "stone composition" up to a certain level has been very cleverly retained by the manner in which the windows of several stories are drawn together into one continuous stone composition. This arrangement is compositionally of great merit; for not alone is the idea of the stone treatment up to a certain level very clearly expressed, but the opportunity is also afforded for making of this treatment striking individual compositions which tell strongly when seen in perspective with the doorway and projecting bays of the front elevation.

The faults of this design, as with most modern Renaissance works belonging to the present London revival, are mainly in the detail. The detail is very bold, which is well in accordance with the composition, but it is also vulgar, extravagant, sensational, which need not be, which is not artistic, and which spoils what might otherwise be a highly successful design. There is a studied attempt in the detail to do the unusual, the extraordinary, very likely with the view of creating a harmony with the strong lines of the composition; but it should be well borne in mind that extravagance of invention and large scale alone will not make a detail powerful, and certainly not artistic. Power is the result of relative rather than of absolute proportion, and as to good taste in Classic detail the same general lines must be followed for large detail as for small.

To begin with the doorway, the pedimental composition is too much pictorial and too little architectural. It reminded the writer strongly of the "painter" as an architectural designer, and called to his mind the book on designs by "Düterlin, of Strasburg." The freedom with which the foliated composition runs away with the mouldings of the pediments is too great; the approved way of stopping pedimental members where a central composition is introduced is to roll them up into a scroll or else to return them. This practice satisfies both pediments and centre feature. The entire ornamental compositions, the detail of the foli age, &c., are very vulgar and sprawling, and the

oblique lines running down to the capitals are extremely ugly. As to the scroll into which the archivolt lines are rolled up immediately above the capitals, the lines simply defy all architectural understanding, and require to be seen to be laughed at. The column, with its capital, shows great lack of skill; for, given its dwarfed shape and the general composition of what it carries, much more might certainly have been made of it; by the adoption of a powerful scroll capital of the Grecian Ionic type (modernised), and by the introduction of a few square or octagonal bond-stones to break the short circular shaft, a feature much more effectively expressing its apparent function would have been obtained. The Ionic scroll pattern (Grecian type) is precisely the form of capital most æsthetically appropriate in such cases, where the weight visibly acts in the direction of the scrolls, and it is capable of great variation and much original treatment. As to the doorway proper the sunk moulding running around it in the form of an architrave looks a little weak and tame in such close proximity to its powerful neighbours; as to the immense tea-urn-shaped vase in the circular opening above the doorway, it is to be condemned from every possible point of view; it is not required, and is very ugly as a detail.

The bay-windows are supported on a corbel, the carving of which is of the same coarse character as all the foliated ornaments throughout, much too realistic or naturalistic in connexion with other details and features, many of which breathe an air of genuine Classic. The detail of the mullion is very original, and contains much merit; but the manner in which the architrave mouldings are stopped when they come above the mullions is somewhat weak. This device, wherever and whenever it may occur, of introducing a carved boss or ornament of some kind to stop or cut off mouldings which otherwise might become troublesome, is very weak, and to be rigidly condemned; it is not an "architectural" solution of the difficulty, and especially not in any kind of Classic. If such mouldings cannot be taken down, nor up, nor returned in any way, they should be abolished altogether: and where they must be retained, the best thing to do is to cut them off square, neo-Grecque fashion. The panels between the two stories of the bays would have been far better sunk than raised. The angle-quoin treatment of the basement or ground-story is weak in appearance as an æsthetic substructure to those which follow in the upper floors. The grey granite in which they are built, and which is lighter in tint than the freestone above, does not excuse this; for art does not appeal to the reflective faculties in the first instance, but to the contemplative faculties, in this case to the eye; and the great strength of this grey granite corner should have been expressed by a quoin treatment more strongly marked even than that of the upper stories, not because it is required absolutely, but relatively, as being the æsthetic base of the upper quoins. These upper quoins are, with their rounded corners and deep joint mouldings, a very meritorious detail, but they have one great fault,—they do not tongue into the brickwork. This fact, joined to the contrast of the colours which here obtains, "isolates the corners," cuts them off æsthetically from the general wall work. It is a great defect, brought about mainly by the colour and the small-jointedness of brickwork; for were the wall adjoining the quoins built in stone, the defect would disappear at once, as the uniformity of the material, assisted by the faint joint-line running into the body of the wall, would at once reveal the structural unity of the wall in a manner satisfactory to the eye. Where quoins of stone are used in connexion with brickwork, they must be toothed into the brickwork in alternate courses, otherwise they will never realise the very idea they are applied for,—additional expression of the structural solidity of the corner. In this case, and therefore in every similar case, the quoins stand like an isolated stone pier at the corner, and completely fail to express their structural connexion with the body of the wall adjoining. As to the treatment and application of quoins, no portion of past architecture is so instructive as the Italian Renaissance. The palaces of Florence, especially, are a distinct quoin-style, and should be closely studied, for this feature of modern Renaissance art is capable of much extension. The writer believes that much progress could be made in this direction, as quoins admit of endless variation, and their application usually leads to a bolder and more original Classic treatment than follows in the path of the column or pilaster. This fact has long been recognised on the Continent; and, not to mention the Louvre, very effective work in this direction has lately been done in Paris and Vienna.

To return to our design with which we have now arrived above the stonework level, we perceive the painful bareness of the three brickwork stories. This is really the only compositional fault in the design. The brickwork portion is so bare and starved looking, so devoid of every attempt at architectural connexion with the remainder of the design, as to greatly spoil the design as a picture or impression of harmony. A string or band in stone or some stone treatment around the windows would greatly help the design as a balanced composition. The centre feature has certainly been carried up in stone, but compositionally it is a bad feature on account of the solidity of the centre line, presumably caused by a wall behind. Such centre walls should be avoided if it possibly can be done, but where it seems necessary to have a centre wall the difficulty in the façade is best overcome by introducing niches, or "recessed" panels with sculptured compositions. The idea is to "obliterate" the objectionable solid centre by setting it back, and thus visibly throwing out the adjoining window features. In point of detail the centre composition above the doorway feature is somewhat out of keeping with the remainder of the work. It is both finer and smaller, and should have been more on the lines of the side window compositions, previously referred to. The dormer windows are of a very squat appearance, with tremendous stonework heads, and the irrepressible tea-urn vase of gigantic proportions. They are extremely ugly, whereas the chimney must be pronounced a highly meritorious feature.

The roof shares the same fault which applies to all French roofs in London; it is set too far back from the wall face, which is caused by the gutter being formed behind a thick parapet. The character of the French roof seems entirely misunderstood in London. The French roof is an ornamental "continuation of the façade," and its plane should therefore be set as far front as possible, otherwise it will be lost to the view, especially in our narrow streets. This object, which is well understood in Paris, is accomplished by the roof being set on the cornice-stone, the gutter being formed in lead on top thereof and fastened into the stone. The gutter is highly effective, and, from its position, can, in most cases, be run in front of the dormer windows in a continuous fall, with down-pipes at the ends. This gutter can also be made a highly ornamental feature, as *vide* the hotels and other public buildings of Paris. The point here at issue is an essential one, which architects should take note of. We deceive ourselves in this respect with our drawings, on which the French roofs, starting up from behind the parapets, look well enough. As at present treated, all we usually see of French roofs of ordinary height is the top of the crestings, the dormer windows standing out in hard bare lines against the sky.

In conclusion, one point must be mentioned in regard to the design here criticised. It must be admitted that with all the faults of detail pointed out, the design has a redeeming feature which is absent in but too many modern works. This design, and also the detail in particular, has a great deal of character, the essential element of style. There is an idea at work in it, the idea of conscious striving after something unusually grand or striking. The remarks also show how subtle is the difference between good and bad in art, a line more here, one less there, is capable of making a vast improvement. As stated in the introduction, it is the detail which presents most difficulties, and which is capable of making a work one of merit or one of mediocrity, and it should therefore be deeply studied by the modern Renaissance designer.

SEMPERIAN.

The Royal Courts of Justice.—The whole of the roof of the Central Hall of the New Law Courts, as well as the roofs of the other portions of the buildings, have been covered by Messrs. Ashton & Green (Limited) with their "Permanent Green Slates." A very excellent job of slating it is, as we have previously had occasion to say. The colour and quality of the material are admirable.

PROJECTED NEW PUBLIC WORKS.

RAILWAYS, DOCKS, HARBOURS, &c.

THE list of private Bills for the session of 1883 is of a formidable character, and includes several projects involving a heavy outlay in construction in connexion with railways, tramways, docks, harbours, town improvements, and other undertakings. Of the total number of 275 Bills in respect of which notices have been given, 125 are in connexion with proposed railway undertakings. Of this number thirty-six of the Bills are promoted by companies proposed to be incorporated for the construction of entirely new lines in different parts of the country. Of the proposed new undertakings six are for the construction of additional railways in and immediately around the metropolis. These include a project designated the East London, Crystal Palace, and South-Eastern Junction line. The undertaking embraces a new line from the Ladywell Station of the Mid-Kent section of the South-Eastern Railway, terminating in the grounds of the Crystal Palace. Another project, called the Mid-Metropolitan, is for the construction of a new underground railway from Lancaster-gate, Uxbridge-road, to Aldgate and the Minories, passing through the parish of St. George, Hanover-square, and continuing eastward along Holborn and Newgate-street, to its terminus in the Minories. A third project,—the London, Hendon, and Harrow Railway,—is a new line which, commencing at Harrow, and, passing through Pinner, Kingsbury, Hendon, Finchley, and Hornsey, forms a junction with the Alexandra Palace branch of the Great Northern Railway, and thence proceeding north-west, terminates by a junction with the authorised Metropolitan Outer Circle Railway, in the Edgware-road. The Greenwich and Northern Lines Connecting Railway,—another of the new projects,—commences by a junction with the London, Blackwall, and Millwall Extension Railway, and, passing under the Thames to Greenwich, forms a junction with the Blackheath branch of the London, Chatham, and Dover line. Another branch from this point at Blackheath proceeds in the direction of Lewisham, terminating near the Lewisham Station of the South-Eastern Railway. The Kent and Essex Junction line is likewise a new undertaking, commencing at the St. Mary Cray Station of the London, Chatham, and Dover Railway, and thence proceeding on to Plumstead, Blackheath, and Woolwich, where the proposed line passes under the Thames, emerging from the river about 200 yards from the North Woolwich Gardens. Proceeding from this point the line terminates in the parish of West Ham, by junctions with the authorised Regent's Canal, City, and Docks Railway, and the Metropolitan Outer Circle Railway. The Poplar and Canning Town Railway is a further new project for the construction of a railway commencing near the Poplar Station of the London and Blackwall Railway to Canning Town, the line proceeding north-eastward, and almost parallel with the East and West India Docks on the south side. By the construction of this line the circuitous route by way of Stratford and Bromley will be avoided, and the distance between the City and Canning Town will be reduced by several miles.

The metropolis and immediate neighbourhood is likewise affected by thirteen of the railway Bills promoted by existing companies. The South-Western Company, in their general Bill, seek powers to effect a junction with the Metropolitan District line at South Kensington; also powers to widen the line between Waterloo and Westminster Bridge-road; and similar powers to widen the Hampton Court Junction line. The Midland Company's Bill includes powers for the construction of additional works at their new large depôt and dock at Poplar, which involves the purchase of land near the East and West India Dock station of the London and Blackwall line. For other works the Bill likewise seeks powers to purchase land and property in Whitechapel, near Royal Mint-street. The London and North-Western Company's Bill contains clauses empowering the company to construct a new street near the Euston station by a junction with Drummond-street, and to stop up a portion of Cardington-street. The Bill likewise contains powers to purchase the burial-ground attached to St. James's Church, Hampstead-road. The Metropolitan District Company's Bill provides for the construction of a new line in Hammersmith. The Great Eastern Company promote a Bill specially

for the construction of a line from their station at Chingford to High Beech, Epping Forest. The projected line will be three miles long, and its estimated cost is 70,000*l*. About six acres and a half of the forest are proposed to be taken for the purposes of the line. The Charing-cross and Waterloo Electric Railway Company, which obtained its Act of Parliament last session, now promotes a Bill for the extension of the line in several directions. Powers are sought in the Bill to construct one of these proposed lines under King Charles's Monument and Cockspur-street; another line from the terminus of the authorised line in Waterloo-road to the subway leading from Blackfriars-road to Holland-street. In continuation of the line from Holland-street the Bill further seeks powers to carry it forward into the City, passing through the parish of St. Saviour, Southwark, and thence into the City through the parishes of St. James, Garlick-hithe, and St. Martin Vintry, near the junction of Upper Thames-street and Queen-street, terminating in Cornhill, close to the Royal Exchange. The Bill authorises the Company to appropriate "the under-surface of the river Thames, or of any street, road, or lands traversed by or situated near the intended railway or works." The Hounslow and Metropolitan Company promote a Bill for the construction of a branch from their present line at Hounslow to the Mill Hill Park Station of the Ealing extension of the Metropolitan District Company. The London, Chatham, and Dover Company's Bill contains clauses empowering them to purchase land and buildings in St. Sepulchre's parish, and also at Herne Hill, for extension works; and the North London Company apply for similar powers as to the purchase of land and buildings at Poplar and Bromley. The London, Tilbury, and Southend Company's Bill contains powers to make new branch lines at East Ham. The East London Company promote a Bill for the purchase of additional land and buildings in Whitechapel for carrying forward works in progress; whilst the Metropolitan and Metropolitan District Companies jointly promote a Bill for the purchase of additional land and buildings in Abchurch-lane, Eastcheap, and other parts of the City.

The additional powers sought for by several of the great companies in their respective Bills for extended works, are of considerable magnitude, more especially the projects of the London and North-Western, the Lancashire and Yorkshire, and the Great Eastern Companies. The General Powers Bill of the last-named company involves the expenditure of no less than 2,000,000*l*. It contains clauses authorising the construction of several new lines, many miles in length, in different parts of South Essex, including lines from Brentwood to Shenfield, Maldon, Burnham, and other districts not hitherto supplied with railway communication. The estimated cost of these several lines is upwards of 500,000*l*. Another line proposed is one down to Tilbury, forming a communication there with the new docks of the East and West India Dock Company, now in course of construction. The estimated cost of this line is 150,000*l*. The Bill also takes powers for the purchase of land at Harwich for the purpose of making a graving-dock, at a cost of 40,000*l*. Likewise powers to construct a large cattle-market at Stratford. Other clauses in the Bill provide for a very material enlargement of the Liverpool-street Station. In reference to this intended enlargement the chairman of the company stated at a meeting which has just been held, that the suburban traffic had developed to an extent largely exceeding the expectations of every one connected with the company, and a considerably larger station than they now had at Liverpool-street was necessary to carry on the traffic. He added, that unless they went to the enormous expense of buying up all the property lying between Liverpool-street and Bishopsgate-street they would only meet the requirements of the traffic for the next ten or fifteen years. The cost of the work from first to last would be from 1,000,000*l*. to 1,500,000*l*., and they proposed to take powers in the Bill to raise an additional 1,500,000*l*. by shares, and 500,000*l*. by borrowing. It was no use "nibbling" at it. At 4 per cent. 2,000,000*l*. of capital would mean 80,000*l*. a year, but he ventured to say there was more than 160,000*l*. a year additional traffic to be gained by the expenditure. The Bill, amongst other things, asks for powers enabling the company to have six lines from Romford up to Bethnal-green and Liverpool-street.——The Bill of the London and North-Western Company seeks for extensive powers for new works at Liverpool, and also at Preston. Powers are also sought for constructing a sea-wall at Llanrhos in Carnarvonshire, and also for the construction of a wharf, a sea-wall, and dock, with entrances and basins, on the River Conway.——The Lancashire and Yorkshire Company's Bill contains clauses providing for the construction of several new lines and other works in Wigan, Manchester, Liverpool, and other parts of Lancashire. The clauses in reference to Liverpool provide for considerable alterations in the railway levels in connexion with the widening of the line and other works for the large new station about to be erected near the Exchange. There are also clauses with reference to buying up houses and closing streets and the construction of new streets in lieu thereof consequent upon the erection of the enlarged station.

The tramway projects, including Board of Trade applications for Provisional Orders, are sixty-one in number, of which twenty-two are for proposed new tramways in the metropolis, eight of these being promoted by new companies. Two of the proposed undertakings, the Highgate-hill Extension and Archway-road, and the Haverstock-hill and Hampstead projects, are for the construction of tramways on what is known as Hallidie's steep-grade cable principle.

The Bills in respect of gas and water supply are considerably below the average of former years, being limited to sixteen in number, which, with seventeen Board of Trade applications for Provisional Orders, bring the entire number up to thirty-three. Included amongst them is a Bill promoted by the Southwark and Vauxhall Company, seeking powers for the extension of their limits of supply to include the districts of Wimbledom, Putney, Barnes, Mortlake, Roehampton, Sheen, East Sheen, Kew, Richmond, and Petersham. The Lambeth Water Company likewise promote a Bill for the purchase of additional lands in the parish of St. Mary, Lambeth, and also in Norwood.

There are twenty-two Bills having reference to the construction of docks, piers, bridges, and the improvement of harbours and rivers, fifteen of these Bills being in connexion with proposed new works. Amongst them is a Bill incorporating a company for the construction of a promenade pier at Torquay, 430 yards in length, together with a sea-wall 270 yards long, and other works in connexion therewith. Another company promote a Bill for the construction of a pier, pier-head, and landing-places, at the end of the Chain Pier at Brighton.—— There is likewise a Bill empowering the construction of railways and storage-sheds around the Bute docks at Cardiff.——The Tower Subway project is for the incorporation of a company with powers to construct a subway under the Thames, commencing at Great Tower-hill, and terminating in Southwark near the site of what was formerly Barclay & Perkins's Brewery.——A Bill promoted by the Thames Conservators empowers that body to erect works and buildings on the banks of the Thames, and also in the bed of the river. The Bill also gives powers to the Conservators to compel the owners and occupiers of manufactories on the banks of the Thames to take steps to prevent smoke and other noxious vapours.——The Porthleven Harbour Commissioners promote a Bill for the erection of a lighthouse at the mouth of the harbour.——The Bill for the construction of a ship canal between Liverpool and Manchester, with docks at Manchester, is also amongst the undertakings in this class.——A company proposed to be incorporated apply for powers to construct a wharf and other works at Portsea, close to Portsmouth Harbour.——The Penzance Corporation apply for powers to construct a new dock and to make alterations in the existing harbour and docks.——The Southend Local Board promote a Bill to extend and improve the existing pier by lengthening it to the extent of 330 ft., and at the end constructing a pier-head running from east to west 300 ft., and from north to south 120 ft.——The Tower (Duplex) Bridge project incorporates a company for the construction of a bridge, with loop bridges thereto, and a swing-bridge therein, with road approaches, over the Thames, from Free School-street, Horselydown, to Little Tower-hill. The swing-bridges are stated to be for the passage through of ships and other vessels.——The Corporation of Preston to promote a Bill for improving the navigation of the River Ribble, and constructing docks at Preston.——The Newport Dock Company promote a Bill for the construction of a new lock and entrance to the company's dock.——A Bill promoted by authorities at Great Yarmouth seeks powers for the construction of a tidal harbour six acres in extent, together with locks, quays, docks, and piers.——A company to be incorporated seeks powers to construct an opening bridge over Langston Channel, between South Hayling Island and Southsea.

Bills in respect of town and street improvements are numerous, and many of them involve works of a comprehensive and costly character. The Metropolitan Board of Works promote a Bill in which extensive powers are sought for street and other improvements in different parts of the metropolis. The powers include the construction of a new street from the Holborn Town-hall to the Angel in Islington; the widening of Upper-street, Islington; Green-street, Bethnal Green, and Little York-street, Bethnal Green; also a new street from Trinity-square to the Minories; a new street in Hampstead, from High-street to Church-lane; a new street in Bermondsey, from Abbey-street to Rothsay-street; and a new street from South Lambeth-road to Walton-terrace. The proposed new street from Holborn to the Angel will be carried over the Metropolitan Railway near Farringdon-road, and also over a portion of the site of the New River. The Metropolitan Board have also a separate Bill conferring upon them new powers as to the accommodation to be provided for the labouring classes. Amongst other town improvement Bills are those promoted by the Corporations of Liverpool, Nottingham, York, Birmingham, Longton, Barnsley, and other places, all of which have reference to extensive street-construction and largely-increased sanitary powers. The Liverpool Bill likewise contains clauses as to the control of street musicians, the control of juvenile traders, the pulling down of notice-boards, and the regulation of bicycles and velocipedes. The Nottingham Bill embraces powers for the removal and re-interment of bodies and the construction of recreation-grounds. The powers sought by the Bill promoted by the Birmingham Corporation include the building of a school of art and science, and also the erection of new assize courts, either for the borough or for any assize district.

A special feature amongst the several applications consists of the Bills seeking powers for the construction of new markets in different parts of the metropolis. There are four Bills of this character.

The South Kensington Market Company apply for powers to erect a market, with shops and other buildings for the sale of hay, corn, and other cereals, fish, meat, poultry, fruit, and vegetables," on a site bounded on the north side by Fulham-road, on the south-west by Sydney-street, and on the south-east by Cale-street, formerly Bond-street.

Another Bill seeks powers for the erection of a similar market in Paddington, the site being between North Wharf-road, Harrow-road, and Church-road.

There is likewise a Bill incorporating a body under the designation of the Mid-London Market Company, which seeks powers to construct a market of an underground character in the neighbourhood of the Thames Embankment. The site named in the Bill is in the parishes of St. Martin's-in-the-Fields, St. Clement Danes, and the Savoy, the areas named being westward from Savoy-street to Savoy-place and Savoy-hill, bounded on the north by Messrs. Rimmell's; also a site extending to Carting-lane, bounded on the south by the Thames Embankment; and the lands between Adelphi-terrace and the Embankment. The Bill asks for powers for the erection of an hotel, shops, warehouses, offices, and subways in connexion with the Metropolitan District Railway. It also takes powers to use the landing-place at Waterloo Bridge. The Fish Exchange Company have a Bill applying for powers to construct a fish-market on the banks of the Thames at Blackfriars, and for this purpose to purchase property including Maggeridge's granary, the City Flour Mills, Vulcan Wharf, Victoria Wharf, and St. Andrew's Wharf.

It will thus be seen from the above particulars that the private Bill legislation of next session is likely to occupy a considerable portion of the time of Parliamentary Committees.

NEW PUBLIC OFFICES AT TEDDINGTON.

MR. WALTER TAYLOR, one of the members of the Teddington Local Board, has undertaken to erect public offices for the use of the district, under the following circumstances. At a special meeting of the Board held last week, Mr. Taylor offered to let on lease to the Board, for 99 years, a piece of land, at a ground-rent of 1s. per annum, on which the Board were to build new offices. At the meeting a pen-and-ink sketch, together with tracings of a handsome block of buildings which Mr. Taylor was in favour of seeing erected on the land, was submitted. In the course of a discussion which took place on the subject it was unanimously admitted that Mr. Taylor's offer was of a very liberal character, but that there was a difficulty in accepting it on the ground that the site would be leasehold instead of freehold, and that in consequence the Local Government Board would probably not allow the Local Board to build upon it. On Mr. Taylor being ask to sell the freehold of the land to the Local Board, he replied that he thought he had made the Board a liberal offer. He had heard it again and again expressed that the time had arrived when Teddington should have a suitable place in which its local affairs could be transacted,—a building suitable to the wants and requirements of the parish,—and it was this fact that had induced him to make the offer. He felt that he was in reality making the Local Board a present of 1,000*l.* at least, and he might tell them that if they rejected the offer it would be largely to his interest. He might also inform them that if they did not carry out the project he should do it himself according to the plans before them. He added that the proprietors of the bank were anxious to take a portion of the premises, and that two banking firms had made applications to become tenants. Ultimately, the Board resolved that they could not see their way to accept Mr. Taylor's liberal offer, the result being that Mr. Taylor will himself at once proceed with the erection of the new offices.

RECENT DISCOVERIES OF ANTIQUITIES.

THE poetry and art of modern times have derived undoubted advantages from the influences brought to bear on them by the discoveries which have been made, since the Renaissance period, of relics which tend to increase the knowledge which has come down from past ages, of the main features of Hellenic art.

The German nation claims in a special manner the merit of having, by the co-operation of its *savans*, and by means of the money granted by the State (more than 30,000*l.*), brought to light at Olympia objects not only of antiquarian interest, but also, to a great extent, of artistic value as models of antique workmanship. In a work on the subject of the explorations at Olympia, Herr Adolph Boetticher, who acted during several years as the accredited representative of the German Government at the Olympian excavations, has recorded (according to the *Cologne Gazette*) a number of facts which tend to illustrate, and in some points to modify, the description of Pausanias, which is contained in a manuscript discovered in the earlier part of the fifteenth century, and which was translated into German by Johann Jacob Fugger. The subject of inscriptions is fully dealt with, and several new theories are propounded with respect to the architectural and plastic arts as practised in ancient Greece. Several plates illustrate the details given on the various subjects indicated.

Although the main facts of the progress of the Austrian expedition in Asia Minor have been from time to time recorded by the European press, yet the details of the sculptures and other objects acquired have only recently been published; in fact (according to the *Hamburger Nachrichten*), only since they have arrived in Vienna, and have been deposited in the museum of that city. The sculptures of Gjölbaschi were described by Schönborn many years ago, that German traveller having visited the spot in 1841; his attention having been specially attracted by a rectangular *peribolos* (measuring twenty-five to thirty paces) with an entrance on the south side. Before Schönborn's time English explorers had been on the spot, and had removed some stones. Their attempts to bring them in an uninjured condition to the sea coast, had, however, proved unsuccessful. Since that time these reliefs would seem to have been left undisturbed until 1881, when Professors Benndorf and Niemann, in company with other *savans*, made a journey of investigation to the spot in question, and found the works still in a good state of preservation. On their return to Vienna they had no difficulty in organising a society for the purpose of raising the funds necessary for obtaining possession of these treasures. The needful *firman* having been granted by the Turkish Government in Constantinople, Professor Benndorf went in April to Gjölbaschi for the second time. The reliefs that he has brought home fill more than 100 cases, and as an illustration of the practical difficulties which have been overcome, it is recorded that the wood for the cases had to be conveyed on the backs of camels to the spot, and that roads had to be made for the subsequent transport of the packages.

Notwithstanding the undoubted artistic interest of the reliefs discovered, it is remarked that their historical application is not at present quite clear. A naval battle, the storming of a fortified city (supposed by Schönborn to represent Troy), and a chase, are described as being amongst the subjects delineated. The hope is expressed that the artistic value of these relics of antiquity may shortly be defined in such a manner that the learned world at large may have an opportunity of becoming acquainted with them, by means of an accurate and intelligent description of their special features.

ARCHITECTURAL EXHIBITION OF THE EDINBURGH ARCHITECTURAL ASSOCIATION.

THE exhibition of drawings and paintings brought together in the rooms of the Royal Scottish Academy under the auspices of the Edinburgh Architectural Association was inaugurated by a *conversazione* on the evening of Friday, the 22nd inst., when the rooms were crowded by a brilliant assemblage. Mr. MacGibbon, the president of the Association, in the course of the evening, delivered a brief address to the assemblage, in which he referred to the cordial support the Association had received, not only from eminent living architects, but from the representatives of others whose earthly course had run, as also by public bodies who were possessed of works suitable for the exhibition. He added that the result had exceeded the expectations of the committee, and referred to the collection which covered the walls of five of the Academy rooms in proof of the success of the undertaking.

The exhibition is, we believe, the first of the kind in Scotland. It contains about 1,200 works, embracing portraits of deceased architects, drawings in colour and monochrome from ancient and modern buildings, designs for buildings completed and for others contemplated, or which were put forward in competitions.

Working drawings form no part of the exhibition. Interesting and instructive as such may be to an expert, they are to the general public a dead language difficult to translate. Almost every architect must have felt how difficult it is to explain his plans to a client, and he must have found that to most a section is an enigma incapable of solution. It is not to be wondered at, therefore, that at the completion of the work he is met with the remark that the result is very different from what was expected.

The drawings exhibited, however, are instructive as well as interesting, showing, as they do, not only the changes which have taken place in taste as regards style, but various modes of representing architectural subjects whether in actual existence or in contemplation.

The simplest mode of treating such is by means of black lines more or less strongly marked, in some instances the openings being filled in with India ink and the mouldings shaded. Then an attempt is made to give a feeling of reality to the elevation by washing it over with burnt sienna and tinting the windows with indigo, adding, perhaps, crimson curtains, a blue sky with white rolling clouds, and sap-green foliage.

Then appears the artistically got-up water-colour perspective, "suffused with a light ne'er seen on land or sea," and finally the vigorous etching, which often displays great power of draughtsmanship, and which is now most highly appreciated. Of the last class of drawings, the most remarkable is the bird's-eye view of the Law Courts by the late Mr. Street, which we take to be the most skilful specimen of draughtsmanship in the rooms. Of the water-colour variety, we single out the competitive designs for St. Mary's Cathedral, Edinburgh, by the late Mr. Burges. Here the interior is bathed in sunshine from floor to ceiling, each detail standing out in bold relief, the massive open-timber ceiling glowing as brightly as the many-tinted stained-glass windows. We look at this design with a loving eye, and cannot help thinking that had it been realised it would have been more interesting and beautiful,—albeit, more strange,—than the more proper and correct work of Sir Gilbert Scott. We have again an opportunity of looking at Sir Gilbert's design, and it occurs to us that in execution the entasis of the central spire has been exaggerated, not with the happiest effect.

A screen is devoted to a series of delicately delineated views in pencil of buildings, chiefly Mediæval, by Mr. MacGibbon, the president; and there are more of a like description by other architects. The system of merely washing in the colour is chiefly followed by the architects of the Classical revival, of which there are excellent examples by Hamilton of Edinburgh, and others.

We shall revert to this exhibition.

THE NEW HOSPITAL AT RUGBY.

ON the 19th inst., "In the faith of Jesus Christ, and for the healing of the sick," the foundation-stone was laid of the Hospital of St. Cross, Mr. Bloxam, Mr. Wilson, and a few others being present, the founders, as we have before mentioned, being Mr. and Mrs. Wood, of that town. A sealed bottle was deposited in a cavity, containing a copy of each of the Rugby papers, a series of silver coins, and the following inscription on vellum,—"In fide Domini Jesu Christi, anno ab incarnatione Domini, MDCCCLXXXII, Die XIX, Mensis Decembris, primum lapidem huius domus Hospitalis Sanctæ Crucis apud Rokeby Ricardus Henricus Wood, Armiger et Elizabetha uxor ejus, Fundatores posuerunt. Hiis testibus Mattheo Holbeche Bloxam, generoso, Henrico Wilson, architecto, cum aliis." A handsome silver trowel was presented by the architect to the foundress. In former days this was not an uncommon name for a hospital, and some of our readers will, no doubt, remember the beautiful Hospital of St. Cross, near Winchester, founded by Bishop Henry de Blois, in 1136, and which still exists for the charitable purpose for which it was founded. The late severe weather has brought building operations to a stand, but they will soon be resumed with renewed vigour. Meanwhile the endowment fund grows apace. One lady, whose name we may not mention, but whose life has been one round of kindness and sympathy to those about her and to her poorer neighbours, has intimated her intention to make a not inconsiderable addition to the fund; whilst another lady, moved by her good example, has promised to contribute the same amount. As we mentioned, Mrs. Hall has most kindly undertaken to obtain 1,000*l.*, and further benefactions will, no doubt, continue to flow in from the charitable throughout the district.

THE LATE MR. ALFRED CROSS, ARCHITECT.

IT is with regret that we have to record the death of Mr. Alfred Cross, of the firm of Cross & Wells, architects and surveyors, Hastings. The deceased gentleman had not been ailing for long, and we have no doubt the announcement of his demise will be a great surprise to many. Mr. Cross was not a native of Hastings, but for the past twenty years he has resided and carried on business in Hastings, and during that time has won for himself many sincere friends. He was born at Bristol, where his father was a contractor in a large way, in 1830, and was thus fifty-two years of age. He was educated at the Royal Naval School at Greenwich, and was afterwards articled to his uncle, a solicitor, in Bristol. He had no love for the law, however, and so he went to London, and entered the office of Mr. J. Shaw, one of the leading architects of the day. Afterwards, he went to the office of Mr. P. Hardwick, R.A. Mr. Cross commenced practice when he was a very young man, his first public building being the well-

known Ship Hotel at Greenwich. He was, we believe, only twenty-two years of age at the time. A few years later, however, he had to leave London in consequence of his wife's health, and he then came to Hastings. He practised both here and in London for a long time, and in 1872 he became associated with Mr. Wells. Since then the firm has been carried on in the names of Cross & Wells.

Messrs. Cross & Wells were, in conjunction with Messrs. Jeffery & Skiller, the architects for the baths; and they also, in connexion with the same gentlemen, obtained the first premium in the public competition for plans for the new town-hall which it was at one time proposed to erect in Hastings. Messrs. Cross & Wells were also the designers of the Albert Temperance Hotel; and, more recently still, of the new Gaiety Theatre. There are several building estates in the neighbourhood which they have laid out, and they have also been architects for a number of private and business houses. It may be mentioned, further, that Mr. Cross was for some time connected with the Duke of Bedford's estate in London. In Lewisham and the neighbourhood he built several houses. Mr. Cross was an active Freemason.

Most of the members of the profession in Hastings attended the funeral, which took place on Saturday, the 9th of December.

OBITUARY.

The late Mr. Chas. John Dimond.—The members of the Artists' Benevolent Fund amongst others will lament the death of Mr. C. J. Dimond, which took place at his residence, 50, Leinster-gardens, on the 17th inst., at the age of 61. He had suffered for some time from a distressing complaint, but this had been much subdued when an unfortunate chill brought on congestion of the lungs, which caused his death after a few days' illness. Mr. Dimond succeeded his late father as honorary secretary of the Fund, and the success with which he devoted himself to its interest, aided by Mr. Lambton Young, secretary, is shown by the satisfactory position the Institution has attained. Not very long ago Mr. Dimond was deeply gratified by the receipt of a charming collection of drawings by members of the Fund, with folio and stand, in acknowledgment of his life-long labours in its service. He had the advantage of a devoted family, who grieve his loss.

Mr. W. J. Boys.—On the 21st inst., Mr. W. J. Boys, who has been borough surveyor of Walsall for about seventeen years, died very suddenly, at the early age of forty-two. It appears that deceased, who had control of the fire brigade, was excited by an alarm of fire, which proved to be false, and was suddenly taken ill and died in a very short time. Deceased entered the service of the Council under Mr. Clarke, the late borough surveyor, as a boy, and won his way to his position by his own merits. He was one of the most respected and esteemed of the officials in the borough.

GROWTH OF WIMBLEDON: EXTENSION OF THE SEWAGE FARM.

In consequence of the continued increase in the population of Wimbledon, the Local Board have found it necessary to extend the area of the sewage farm, and also to carry out further sanitary improvements. Last week Mr. Arnold Taylor, one of the inspectors of the Local Government Board, held an inquiry at the offices of the Local Board in reference to an application from the Board to sanction the purchase of nine acres of land to extend the sewage farm, and also to borrow 10,500*l.*, of which 6,000*l.* are for works of surface-water drainage; 4,000*l.* for works of private street improvements; and 500*l.* for the erection of cottages at the sewage farm.

Mr. Whitfield, the clerk to the Board, in addressing the inspector on the proposed powers as to the purchase of land, said that the very extraordinary and rapid increase of population in Wimbledon necessitated, and would from time to time necessitate, further provision for the disposal of the sewage of the district. The Local Board had come to the conclusion that it was now necessary for them to acquire further land in the immediate neighbourhood of the present sewage farm. This land was nine acres in extent, and was the property of Mr. Beaumont, a large landowner in the district. The Local Board had naturally been anxious to deal with the matter without troubling the Local Government Board to make a provisional order, but there appeared to be no probability whatever of coming to terms.

It is understood that the provisional order asked for by the Board will almost immediately be issued.

THE ARTISTIC TREATMENT OF EXISTING DOMES AND CUPOLAS.

Sir,—A lengthy essay might be written on the above subject, but, at the present moment, I should merely like to say, if you permit, that I think there appear to be several Renaissance examples by artists of the highest class which justify Mr. Robins's suggested treatment of the dome of St. Paul's Cathedral.

Guido, Correggio, and Cignani have all painted domes, and each selected a subject,—the Assumption of the Virgin,—which the spherical form upon which they were about to work doubtless suggested to them. They appear to have thought that to divide the surface into a number of vertical parts, by means of ribs, would sacrifice the opportunity for a grand and magnificent effect.

As the principle of composition is the same in all three, a brief description of Correggio's, which was executed at Parma between 1520 and 1530, will suffice, and perhaps be acceptable. The painter imagined the drum from which the cupola arises to embrace the earth on which stood the sepulchre of the Virgin. At each of the angles of the octagon rises a candelabrum, with a number of boys engaged in lighting tapers and burning incense. On the base of the cupola stand the twelve Apostles, of heroic size, looking upwards in astonishment, and as if dazzled by the great light of the celestial host who transport the Virgin above. Heaven appears open to receive her. The angel Gabriel descends to meet her, and the different hierarchies of the blessed circle round him. In the pendentives below are the four protectors of Parma,—St. Hilary, St. Bernard, St. John, and St. Thomas, attended by angels symbolical of the virtues of the saint.

The fresco is very spotty from decay, and is otherwise difficult to study, but there are excellent copies in the Pinacotheca, by the late Professor Toschi and his pupils.

May we not consider that in the spherical arrangement,—on the flat,—of Sandro Botticelli's grand picture, recently acquired by the nation, we have this great artist's idea,—in fact, a design by him for the treatment of a dome? In this there are no vertical lines, though it is evident that Botticelli considered symmetry was necessary; for he has placed the front row of figures equi-distant, and made them correspond with one another. Pietro da Orvieto painted spheres, the empyrean and the celestial hierarchies in his allegorical representation of the Creation, in unbroken circles, on the walls of the Campo Santo at Pisa; and the same idea was adopted by Bernardo Luini at Milan.

Does not the fact that Sir Christopher Wren left to the painters of the future a perfectly plain smooth sphere, without any vertical ribs or mouldings, indicate very decidedly that he disapproved of any architectural,—imitative or real,—subdivision of the surface of his dome? Does it not seem to prove that he had seen and admired Correggio's cupola at Parma?

Whether the life of St. Paul would lend itself happily to this mode of treating the dome of our cathedral can easily be determined by the talented men particularly interested in a successful result.

H. De Sivart.

THE NEW "POUHON DE SPA."

It is to the spring called Pouhon that Spa owes its existence. It is, in fact, near to it that an inhabitant of Breda, called Colin Wolf, or Leloup, laid, in the fourteenth century, the foundations of a building on some ground that he had obtained by concession from Adolphe de la Marck, Prince-Bishop of Liège. Other springs were successively discovered, and it is owing to them that the insignificant little village acquired a prosperity that led to the saying, "One sees at Spa Europe in miniature."

The spring in question is situated quite in the middle of the town, and was covered over in 1820 by a building in the form of a pagan temple, erected by the orders of William of Orange in commemoration of the cure of Peter the Great. This portico has been replaced this year by a proper monument, where visitors find a spacious and comfortable pump-room, a vast saloon, a well-lighted promenade, and in the upper part a glass rotunda, a half-circular gallery, and a large estrade for an orchestra; in fact, there is every comfort that can be desired. The edifice designed by the architect, Mr. Besme, and constructed by M. Peret, presents an aspect equally agreeable and imposing.

ENTRANCE HALL TO A HOUSE IN RATISBON.

Many of the old houses in Ratisbon still retain their vaulted entrance-halls. Some of these are beautiful examples of architecture, and date from the thirteenth and fourteenth centuries. The example we give is (or was) in the Goliath Straze: we say "is or *was*," because, when we sketched it, four years back, we were informed that a plan for widening the street had passed the Town Council, and if this plan has been carried out this very interesting house has been "improved" off the face of the earth! This is a great pity, because it was one of the most perfect examples of a fourteenth-century house in Germany. The detail of this hall was rather English-looking.

What was the object of these vaulted entrance-halls, once so common at Ratisbon, it is difficult to say. Some people have supposed that they were the places where the merchants stowed away their goods, and were for that reason vaulted in order to render them fireproof. What seems rather to tell against this theory is the fact that these halls are found in the Street of the Ambassadors, attached to houses which are known to have been inhabited by the nobles of the empire; then, again, the fact of their being almost peculiar to Ratisbon, which never was a commercial city, would lead to the supposition that they were never intended as places for storing goods. They also seem far too handsome for such a purpose. In one house which we saw the hall was divided into a kind of nave and aisles by two rows of columns; and in another the hall, which was used as a circulating library, had thirteenth-century vaulting of a very acute form, with singularly rich bosses at the crossings of the ribs. In another of these halls we found three canopied stone seats, looking very like the sedilia of a church. It is by no means impossible that these halls may have served the same purpose as the halls of our old English mansions, *i.e.*, they may have been used for the meals of the family, which would account for their being treated in such an ornamental manner. Every example which we saw was on the ground-floor. How many of these interesting halls exist in Ratisbon it is impossible to say, but probably they are very numerous, as in two cases we found them existing, although the whole of the rest of the houses had been rebuilt about a century back.

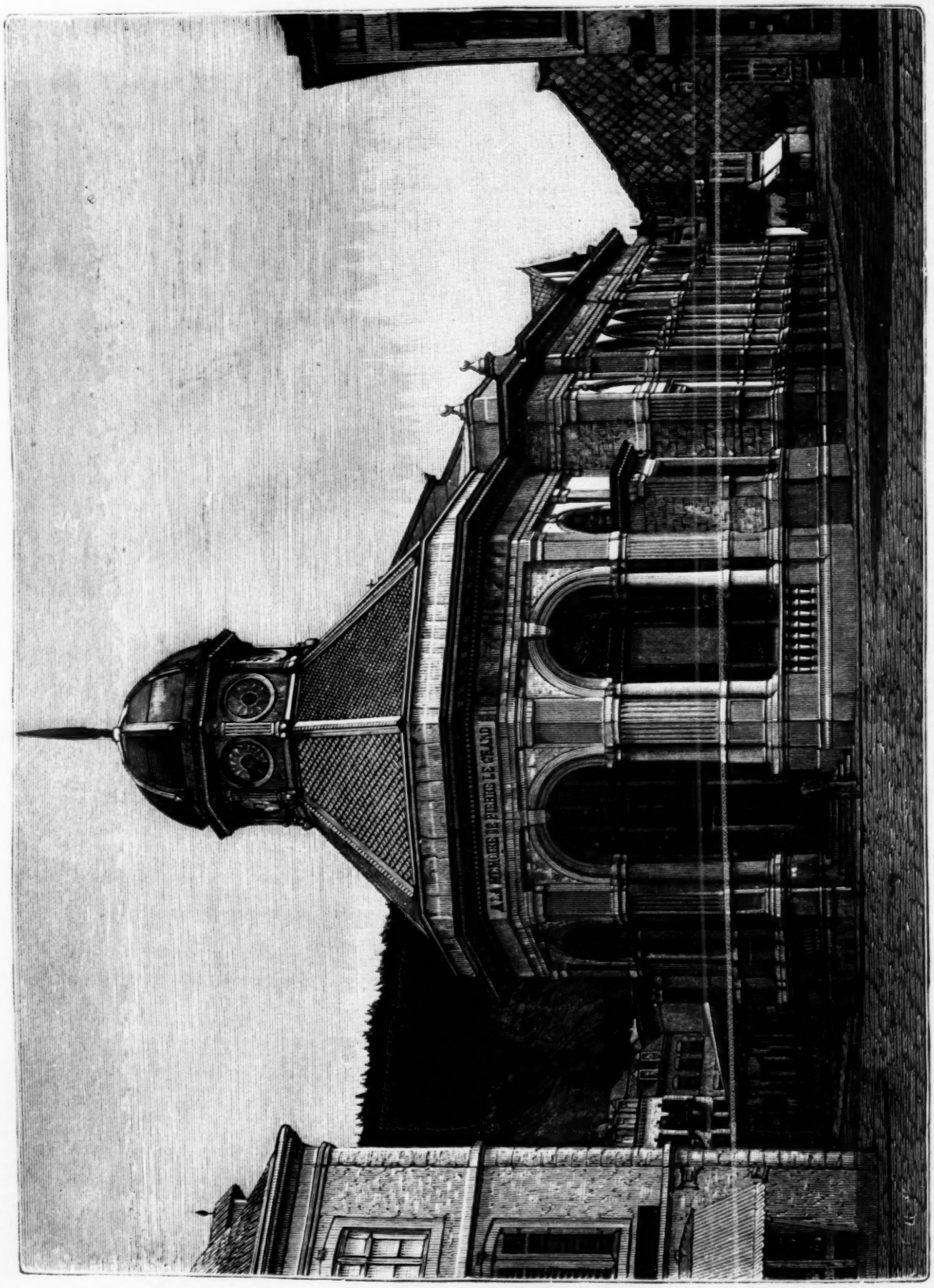
The great rage for "improvement" which has set in in all German towns, will probably in a few years sweep away these interesting structures, and many beautiful features of Mediæval Domestic architecture will have ceased to exist.

THE SACRISTAN'S HOUSE, ST. JAMES'S, ROTHENBURG.

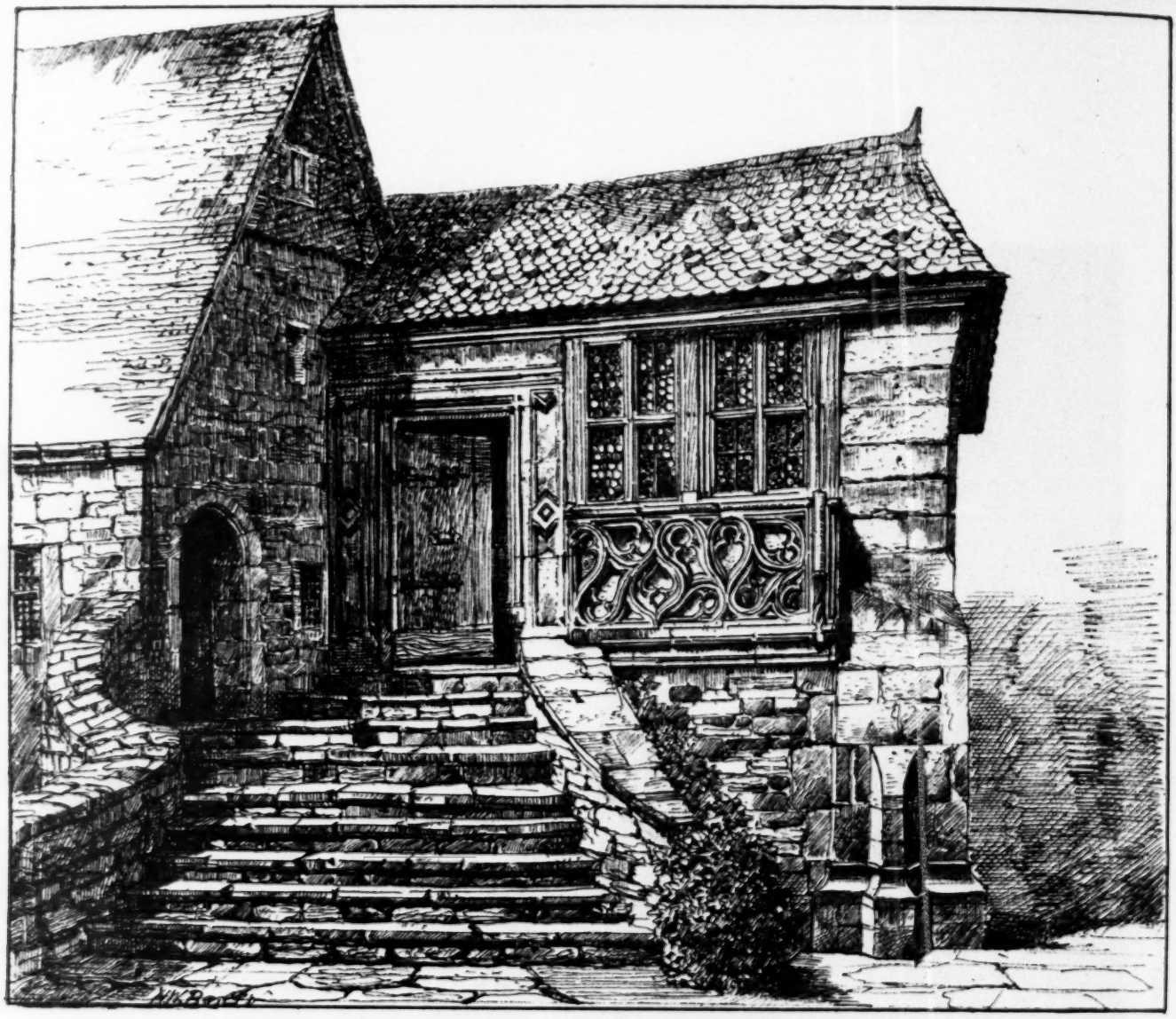
The pretty little dwelling which we illustrate is situated just opposite to the doorway of the great Church of St. James, at Rothenburg. It probably dates from the end of the sixteenth century, as it will be noticed that, although the traceried panel under the window is quite Gothic in character, there is some thoroughly Renaissance panelling between the window and the doorway.

The mullions of the windows are of wood, and the original glazing, which still remains, adds greatly to the picturesque appearance of the building. From the very solid way in which the basement is constructed, we are inclined to think that it was intended to support a much more lofty structure than that which at present exists; probably, also, the window is rather later in date than the other part of the work.

We have, in previous volumes, given illustrations of the Church of St. James and other buildings in this most interesting old town.



THE NEW POUHON AT SPA.—M. Besme, Architect.



THE SACRISTAN'S HOUSE, ST. JAMES'S, ROTHENBURG.

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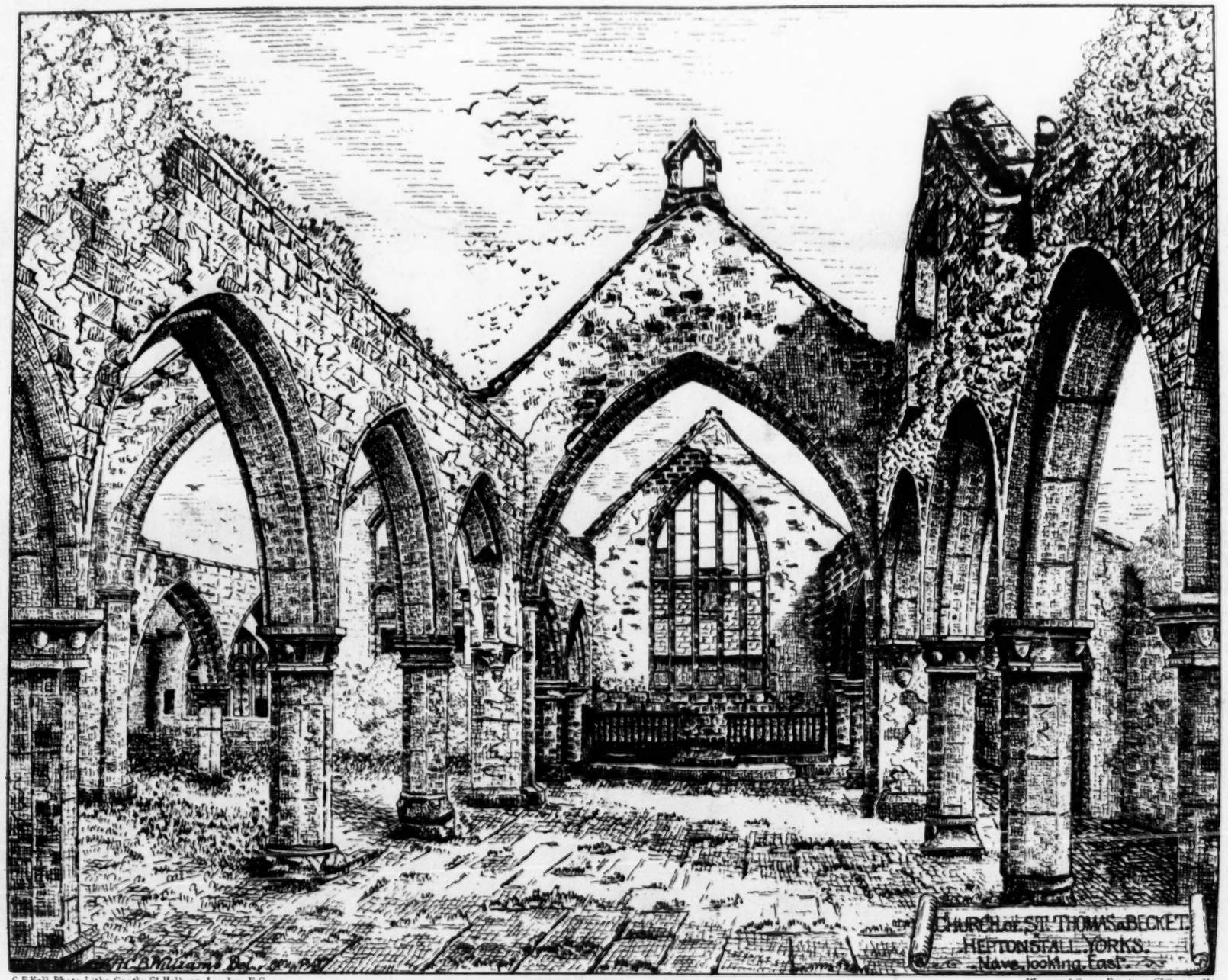
ENTRANCE HALL TO A HOUSE IN RATISBON.



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A NEGLECTED CHURCH.

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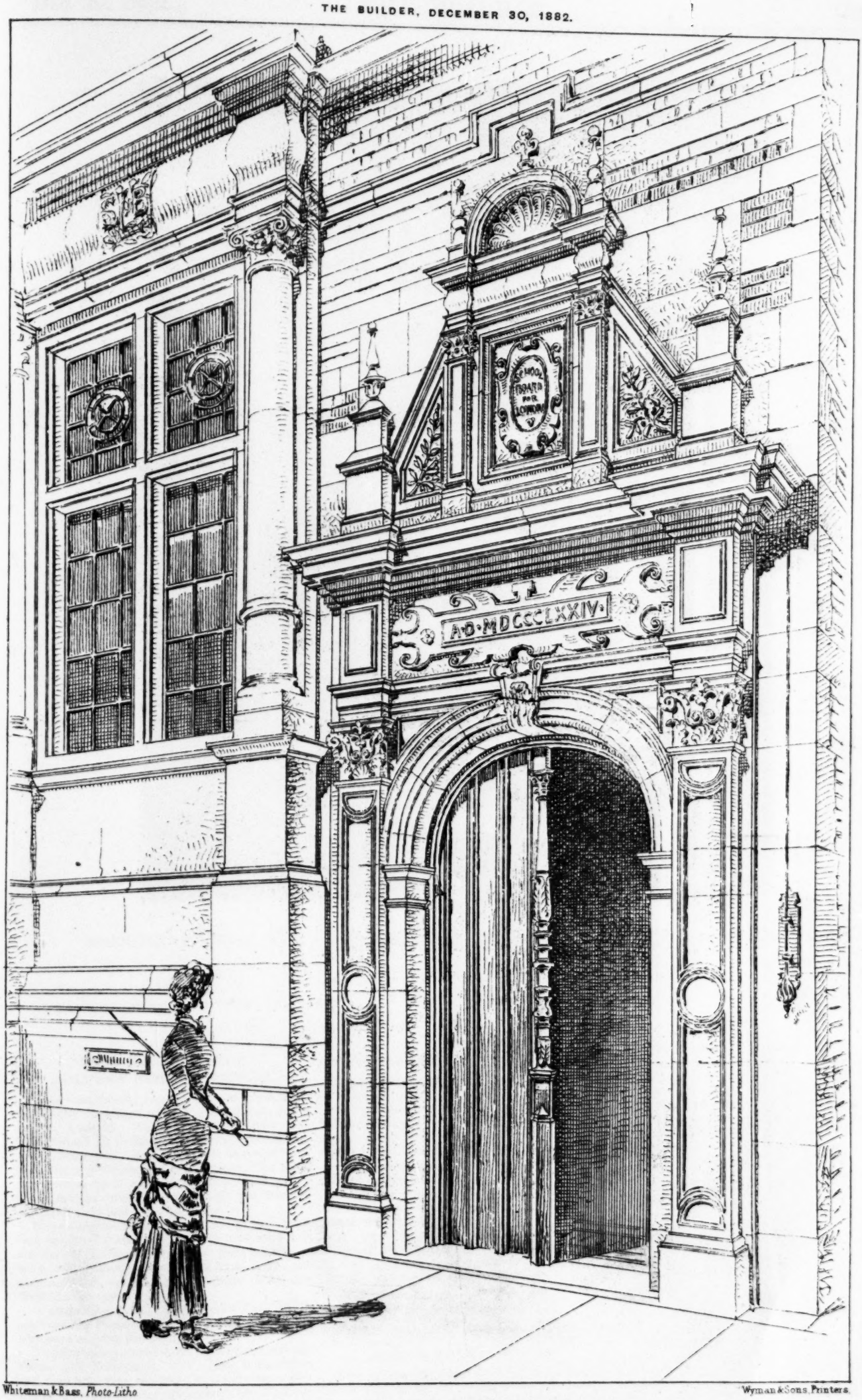
COUNTRY RESIDENCE: GOLDER'S GREEN, FINCHLEY.——Mr. John Birch, Architect.



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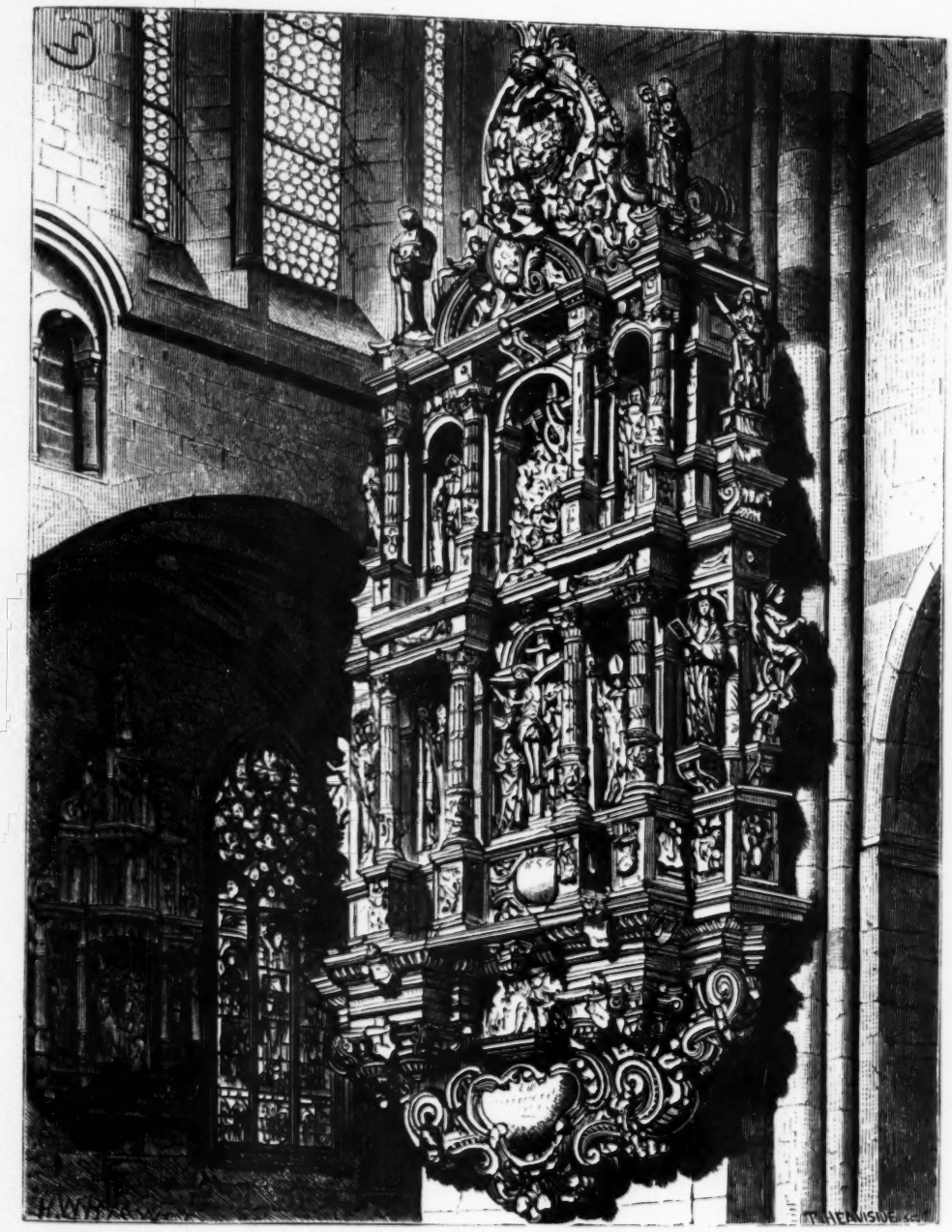
DOORWAY, LONDON SCHOOL BOARD OFFICES, VICTORIA EMBANKMENT.—MESSRS. BODLEY & GARNER, ARCHITECTS.



MONUMENT FROM THE CATHEDRAL IN BREDA, HOLLAND: SIXTEENTH CENTURY.

COUNTRY RESIDENCE, GOLDER'S GREEN, FINCHLEY.

THIS residence has just been completed under the direction of Mr. John Birch, John-street, Adelphi. Considerable difficulty was experienced in finding a firm foundation, owing to the nature of the ground, but this was overcome by a judicious use of concrete. The walls are carried up of red brick, and pointed with a black mortar joint, and the roofs are covered with red tiles laid upon boarding.

The principal rooms are on the ground-floor, and disposed towards the south and west, and consist of dining, drawing, and morning rooms, with low windows opening on to a lawn; the entrance-hall, offices, and servants' wing are towards the north and east.

A projecting porch, glazed with lead lights, encloses the front entrance, and the tradesmen's entrance adjoins the road.

The first-floor contains six bedrooms, dressing-room, and bath-room, with other necessaries, and above the floor are two attics and a box-room.

The internal fittings throughout are of yellow deal, and the floors are partly deal, oak parquet, and pitch-pine.

Special attention, it is said, has been given to the drainage and ventilation of the building.

HEPTONSTALL OLD CHURCH, YORKS.

THIS venerable ruin is situate on the summit of a commanding eminence, in a district noted for its picturesque beauty. It dates from the thirteenth century, and was originally dedicated to St. Thomas of Canterbury. A few years ago the edifice, being considered in a dangerous condition, was unroofed, and a new church was erected on the adjoining site.

Since the drawing was made, a portion of the south aisle wall has fallen down, and the tower will doubtless ere long share the same fate, a great mass of masonry having fallen out at one of the angles. It is to be regretted that so fine a specimen of a double-naved church should become so absolutely a prey to the ravages of time.

A. W.

THE DOORWAY OF THE LONDON SCHOOL BOARD OFFICES.

THIS is the entrance to a modern building, which has much in it deserving of study; especially by those visitors to our metropolis having a taste for the pleasant pastime of reflecting philosophically on the ebbings and flowings of architectural taste in our day.

Messrs. Bodley & Garner were the architects.

Great care has been taken to reproduce the features of that period of the past chosen for revival. The style is the style *par excellence* for joinery, and certainly there is this to be said in favour of its resurrection,—that this elaborate introduction of joinery lends itself well to the making-up of a comfortable structure.

MONUMENT AT BREDA.

THE beautiful but sadly neglected old cathedral at Breda, in Holland, is rich in monuments of every description. The brass font, the choir-stalls, and the noble monument of the Nassau family have been already illustrated in this journal, and we now add a drawing of a very remarkable example of a mural tablet monument. This work is interesting, as showing the thoroughly Italian character which the Renaissance assumed in some parts of Holland.

When we say that these monuments are Italian in character, we must not be understood to suggest that they are the work of either Italian architects or workmen. The dates of their erection would preclude the possibility of their being so. The monument now given dates from the year 1536, and is to the memory of the Count de Bourneval.

THE FOUNDATIONS OF ART IN ARCHITECTURE.*

II. INTENTION.

TURNING to the next fundamental principle, I find its absence to be the root and cause of so much bad architecture, — viz., "*Intention.*" In all walks of life "good intentions" are slightingly spoken of as implying the want of any clear and decisive intent. We are even told of a place, far beneath our ken, significantly paved with some peculiar tesseræ of irresolution. Here is a pivot on which much must turn. Have we no clear light for our future work? Then are we groping, and our buildings are either borrowed from the minds of others, or bear the marks of infirm purpose. In modern architecture, want of intention can easily be identified. Buildings which neither fit their purpose, express their use architecturally, nor give pleasure to the beholder. Buildings formed neither to educate, to amuse, nor to adorn. Composition, grouping, massing, proportion, and general result, all at haphazard or by mere accident. Detail, so far as detail can give expression to a definite, real design, unmeaning as the monkey's chatter. A prevailing sense of stupidity and uninterest. An air of struggle in some cases equally aimless and resultless. The greater the visible struggle, of course (as in all art matters) the greater the failure. This presence of apparent effort in the designs of modern buildings is always one of the worst symptoms, and calls to one's mind the fable of the frog and the bull. It tells of ignorance, vanity, irresolution, and want of power. He who works in fullest truth, without pride and with simple aims, works naturally. He who knows and loves his art works easily, with much suggestiveness of pleasant inner thought and of more pleasant things to say by-and-by. Though aware that the highest art is that which conceals art, no architect (if he happen to be an artist) can help revealing his mind in his work. These idiosyncrasies, indeed, form part of the pleasure to be found in it. But, when he indulges further in all kinds of personal conceits and self-glorifications, his peculiarities become more objectionable than in private life, for in architecture they are indulged in to the misery of mankind at large; and we see the absence of Intention.

In beholding the finest buildings, we think least of their architects. Our joy is more akin to that which we feel at the sight of a glorious landscape; and the less we obtrude self in our own work, the better the work will assuredly be, as having been studied and produced for its own sake, and been a sharer in our own delight. Modern personal literature is bad enough; the architectural degeneracy which causes people to inscribe noisily on their buildings "Smith," or "Brown," or "Jones," is worse. The greater historical knowledge of architecture, arising from the increase in the number of books and the invention of photography, has undoubtedly increased our want of right "Intention." It has given rise to more and more downright copyism, some clumsy adaptation, and a serious amount of architectural muddle in building. Rightly used, books and photographs ought to produce a greater consensus of knowledge, and should enable men to think more freshly and design more freely. Mere "eclectic" building, however clever, only renders more conspicuous the absence of the designing and creating power, and the want of a clear artistic intention. On the other hand, when we come to look attentively at really good architecture,—I leave you to choose the country, the period, and the building,—there is no vagueness, no indecision, no doing of things by accident, no drifting helplessly from one idea to another. The artist first grasped his building comprehensively as a whole, with a clear definite intention of what he meant to say; he then proceeded to say it; and he conveyed his very meaning and purpose on the face of his work, every moulding and member, window and door architrave, cornice and sculpture, being, in his hands, so many opportunities for proclaiming his Intention. If you wish to produce and intend to produce good art, you must endeavour to understand, first of all, that you will never get paid for it. The pleasure you have had in it must be, to yourself, all the reward you will ever receive. You will, of course, be paid your percentage calculated on the sum which the builder has received for his part of the work; but you will receive this all the same if you work with the mind of the tee-square and compasses, and not in the spirit of the artist. The art in your work depends wholly upon the pleasure you have taken in it, and has no market value.

When, in the year 1270, Cimabüé, uniting the idealism of the old Greek with the poetry of human life in a religious picture, painted his celebrated Madonna, now in the Church of Santa Maria Novella at Florence, the whole populace rose in triumph at the revelation; the picture was carried in procession to the church, and the street in which the painter lived was called ever after "The Joyful Quarter" (*Borgo Allegri*). These were times when an enthusiastic people were enthusiastic about art. Our public, on the contrary, judge it all by the standard of £. s. d. Fancy the design for the Albert Memorial or the Griffin carried in state through London, or the designs of your Cloth Hall paraded down Briggate!

It is, in spite of public apathy and ignorance, that you have now to work and think. Your deliberate "Intention," therefore, is by no means a trivial matter, and can only come from such inner light as you may yourselves have. Suppose you change places for a moment, and form one of the public looking at a new building. The first question you have to ask is, "What did that man mean?" Until you have answered it, all criticism must be vain. Often you will be disappointed, and find that nothing of good was carefully and deliberately intended. When you recognise true intention, you will always find more and more interest in the building, though you may not find, as our friend the dictionary-maker would expect, that the design is "referable to some model," or copies the silly fashions of the day. This change of places may perhaps bring vividly to your minds the immense difficulty of forming true architectural intention. It presupposes a long hard course of study, extending over many years (for no man is an architect under forty), and a ripe judgment. You may ask what that course of study should be. Beyond the usual course of study, I should say, "Study the works of Christian times, when faith was simple." Ponder your Greek by all means, though the work of heathens; no people are more clear in their intentions or more perfect in their works. Then study Christian art while the faith was young. Skill is less; intention quite as clear; suggestiveness everywhere. Go to St. Trophimus at Arles, to St. Ambrogio at Milan; Trent, Spàlato, and Ancona will each repay you; drink in the history, antiquities, and mosaic pictures of that stranded city of the sea,—the unique Ravenna; and see what may be yet left of St. Mark's at Venice. We are apt to be blinded, or at least dazzled, by the splendours of the Renaissance in Italy, and I should be the last to say that they have nothing to teach of architecture; yet, judged by our somewhat severe test, we may, on the whole, be content to leave them all to the painters and sculptors. Painting and sculpture then attained to a high pinnacle in skill of execution. In point of fact, we have more of fine art in architecture to learn from the Greeks, and more of single-minded clear intention from the early Christians, who, like Cimabüé, attempted in their way to combine the two.

If I wished to instance, perhaps, the noblest examples of clear high-souled intention, I should point to the frescoes, paintings, and architecture of Giotto, at Florence. These will merit and repay any amount of careful study. What they all meant in those days by the cavernous ugliness of the interior of their cathedral, reserving their most splendid marble and decorations for the outside, nor why they allowed Brunelleschi, after the death of Giotto, to exhibit his mere cleverness in construction by planting a dome on the crossing for which the building was never designed, I will not pretend to say.* But the pride of the Florentines of that day is surely the key; and, if we look to the instructions given to Giotto about the Campanile, we read it plainly. He was "to construct an edifice which, in height and in richness of workmanship, should surpass any structure raised by the Greeks or Romans in the most palmy days of their power." But Giotto happened to be a true artist; he happened to possess some of the divine afflatus without which there is no art; and he made his work all that, and much more. I do not praise Giotto because in his works he constantly preaches the truths of the Christian religion. After all that has been said on the subject, I do not feel sure that he considered it any part of his business to teach religion at all. We only know that his clear, vivid perceptions are never dimmed by any doubts about the doctrines of the church; and, having poetry in his soul, he set himself to represent, in a true poetic spirit, both in painting and sculpture, the prevailing beliefs of the time. In his Campanile at Florence, the result of his "Intention" is form, proportion, and colour of the finest,—sculpture of the noblest, most interesting, and most instructive. No tower and no building in the world brings home to one's mind so clearly Schlegel's description of architecture as "frozen music."

III. RIGIDITY.

In ordinary language, as you all know, rigidity means merely stiffness or want of pliability, and in connexion with building it might at first seem to allude only to the material quality of strength. In the arts, however, the word signifies something more than the starch to your shirt-collar. It has a meaning distinct from that in common vogue, and is used to express a particular æsthetic quality or value opposed to easy softness, incoherence, or languid beauty, and having for a result the stamping of the work with vigorous character. We recognise it in fine sculpture constantly, especially where it suggests imminent or actual action of the figures. To carve men and animals in marble at the moment of action or impending action was always the sculptor's highest aim in the time of Pericles. When they succeeded, as they often did, the test was rigidity, with often an admirable choice of the decisive moment. What we admire in the Elgin marbles, after satisfying our minds as to the action of the horses, the grouping, &c., is this subtle quality of rigidity, involving choice of moment. Do not be led away by the notion that good sculpture requires the portrayal of actual action. The suggestion of some impending action is often better, for, in all the arts, works which do not suggest something more are always the dullest. Thus, when Michelangelo stood, as is related, before Donatello's St. George (which is equally poised on both legs behind his shield) and, after studying it for some time, exclaimed "March!" it was the quality of rigidity and suggested movement which excited the admiration of the great master. The "Wrestlers" and the "Knife-whetter" of the Uffizi, both in vigorous action, have it. But so also has the immortal Venus of Milo in every line, despite its comparative repose. In architecture we have no other word to express exactly the same artistic quality. If we know anything, we unconsciously know it when present. It is a kind of backbone. And, if I were asked to define the precise quality in which the best work of my friend, the late Mr. Street, excelled, I should say "Rigidity." I should hold the same with regard to the works of the late Mr. Thomson, of Glasgow.

Let us see whether we can learn anything from the sculptor and this element of his work. Now sculpture is the art of graving or cutting hard materials,—so far as we are at present concerned,—hard marbles. In all the best times of sculpture only the hardest marbles were used, such as would bear the finest incising in the flat, or the utmost finish in the round. Witness any fine old Greek statue, or study the tombs in the floor of Santa Croce. It has been reserved for degenerate Pisans and Florentines to produce every year thousands of worthless copies of fine things in the softest marbles of Carrara, easily sold to the Cockneys of all nations.

The great period of Greek sculpture may be said to have begun with the birth of Phidias in 484 B.C. It is instructive to note in passing, that not only did all kinds of artists and artificers work under the orders of Phidias, but also the architects. In his hands, figures are always draped with studied grace, lofty purity of intention is never forgotten, and the subtle element of rigidity is never lost. Others were led away by the pursuit of mere beauty, first by showing the whole female form through closely clinging draperies, and then (as by Praxiteles) entirely nude. This led soon to the expression of sensual beauty, and Greek art step by step declined. Truth, purity of intention, both gone, a sure degradation set in, till in the later Greek,

* An address delivered before the Leeds Architectural Society by Mr. Edward Robert Robson, F.S.A., December 4, 1882. See p. 806, *ante*.

* I am well aware that Michaelangelo greatly admired this dome, and made it the foundation of his dome at St. Peter's. This would naturally be so in an age of little constructive knowledge, and a delight in mere "*tours de force*," so common in the times of the Renaissance.

and the Roman done by Greek hands, we forget even to look for rigidity.

Our buildings must ever be treated as wholes, to be seen from every side with a sense of unity, just as sculptors treat their subjects. No ostentatious fronts of stone and shabby backs of bricks. Even, indeed, when wedged between others in a street more closely than the statue in its niche, the stone and the brick must receive equal attention. Just as the best sculptors of old selected the best materials in their neighbourhood, the hardest marbles, difficult and laborious to work, but able to carry well the imprint of art, so we in our buildings must not use the badly-made or burned brick, the stones unfit for our climate or laid in improper positions, the unseasoned timber, or the thousand other bad things which, in this ingenious age, are thrust upon us.

I have already endeavoured to point out how Truth must always be your basis, and Intention, clear, definite, and always pressing upward, should guide you artistically in all your works. This third principle should form the natural result. When you have achieved a noble work in which rigidity is present without struggle, repose without inanity, and the more usual qualities of architecture are not violated, you may know that your building will give pleasure or instruction to others. On the contrary, the absence of rigidity will mark it as a dull uninteresting one. In a word, if you wish to ascertain whether you have any real perceptions of art in architecture, you may measure yourselves up by seeing whether you can judge of its presence or absence in buildings.

I do not say that the principles I am laying down are the only ones needed, or that their practice will give the artistic power of creation to him who has it not. But they form leading elements easily remembered. They will bring independent thinking, thinking with knowledge, and will help our emancipation from the monkey-like habit of imitation, the modern curse. A little honest thought of them would have rendered impossible the "battle of the styles" which raged a few years since. That battle was waged by every one who took part in it on the unconscious assumption that, in the nineteenth century, English architects could do no more than imitate the art of some past time, formed for another age, and perhaps grown in a different climate and country. If a man be working honestly and truthfully, he need not fear conflicting styles. He is not hard at work copying the productions of deceased artists. He has learned, or is learning, that to do fine work he must maintain a lofty ideal. He takes a great and real pleasure in his labour, which is itself the surest way to stamp his productions with the Hall-mark of art.

It is not given to every man to be an inventive or creative genius. Such a man as Leonardo da Vinci is only possible when the universal impulse and struggle of the time acts upon a man of rare gifts, intuitions, and deep knowledge. Rules are necessary in architecture, as in the sister arts, and can never be abolished without loss. Yet their observance without thought, or without a knowledge of the bases on which they were founded, can only be at best a superstition. Rules may be said to formulate the accumulated wisdom of generations of artists who have preceded us. In regard to what may generally be styled Classic architecture in England, the slavish following of rules gradually became, in the later years of the last century, the ruin of the very thing they were intended to sustain. By a strict adherence to the letter only, the spirit of academic rules was gradually lost, new buildings wore a certain air of artificiality, they ceased to speak as man to man, or to give pleasure, and the evil increased step by step till it reached the blank respectability to be found in Gower-street, and the solemn inanity of the Cannon-row Civil Service building. But for this decadence, and the inevitable striving after novelty, it is fair to assume that the Gothic revival, which the nineteenth century has lately seen, would have been confined to church building. So far as its constructive teaching went, it did noble work, and has laid the foundation for further progress. So far as it copied the language of a warlike age, and taught the sermons of a monkish life, it was out of harmony with the time. In this sense, our Palace of Justice, noble as it is, is an anachronism, or at least records the awakening half-knowledge of the time.

Creative art can never be produced by rules, however necessary. We cannot always be repeating the wisdom of the ancients. Even Shakspeare may be quoted too often, and the Bible itself degraded by misuse to an ignorant fetish. Times change. New wants of the time arise. The artistic perceptions in relation thereto grow clearer. There is no rule without an exception. And he who has passed into the inner sanctuary behind architectural rules and canons may sometimes break them with advantage. This advantage can never lie with the ignorant. With him "what is new is not true, and what is true is not new." With him originality is but another name for bad architecture. You may know all about architecture and construction, may be splendid draughtsmen, even able, like the old Greeks, to portray the human figure in action, and yet fail to be architects in the one great sense which, rightly understood, is the only sense. When you are worthy exponents of "*truth in the treatment of material*," when a clear, vigorous, and decided "*intention*" marks every movement of your pencil, then I may safely leave you to the study of the higher things of architecture. Possibly your buildings may come to be as full of rigid life as the Elgin marbles, and we may discover the presence of that little spark of the divine afflatus which indicates true poetic art, and which, all the world over, and in all time, marks out clearly and plainly, to all who can see, the difference between building and architecture, between him whose eyes are opened to art and him from whom the scales have not yet dropped.

I ought, I think, to give some examples of rigidity in architecture. It is no new-fashioned thing brought down fresh from London. You may find it all over Europe, and easily in any of your own Yorkshire abbeys. English works of the twelfth and thirteenth centuries never lack it. When we come to flowing tracery, the pursuit of mere beauty sometimes dimmed it, and in the Perpendicular work of Somersetshire it still survived.

In Italy the study of architecture must ever be pursued from a different standpoint, yet I am content to judge it by this test of rigidity. There, after the early Christian art, I greatly prefer the architecture of the twelfth century to that of the thirteenth. This, not from any preference on my part for the round arch over the pointed, but because of the greater amusement and instruction derived from the work, and because it is the suggestive point after which, to my mind, architecture in Italy went astray. This west front (or what in England would be the west front) of the cathedral of Lucca, of which I have here some large photographs, is a good illustration. I select it chiefly because it is something you may not have seen. First notice the amount and manner of the stilting to the arches. The three larger arches of the lowest story are round, that on the right hand being considerably smaller, a difference so cleverly masked as to be far more apparent on the photograph than on the building itself. Then, observe the treatment of the various orders of the arch. They are narrower at the springing, and much wider at the crown. The round arch of the opening becomes embraced in the either elliptical, or (as my own opinion inclines), hand-drawn forms of its outer orders. What would otherwise be great clumsiness just above the capitals is entirely avoided; and a singularly beautiful effect in expressive rigidity is attained. The side walls of the church of Early Gothic lose the treatment altogether, and are lifeless and uninteresting by comparison. I commend to your notice this union of the circle and ellipse, especially when the aid of splendid sculpture can be obtained. I commend also to your attention the especial sculpture of this façade at Lucca. Photographs can never do justice to the loving thought or the lavished labour to be found all over it, in capitals, columns, and, indeed, everywhere else. I should unhesitatingly pronounce the building to be the design of a sculptor, if it were not characterised by so many of the higher and rarer qualities of architecture. Can it be that it was, after all, designed by a sculptor, and that his knowledge of rigidity in sculpture led to freer handling in architecture? I leave you to settle this for yourselves. One thing I know, viz., that if you wish to discard style and copyism, and to produce real work of your own, you may find all the necessary principles, including the proper union of sculpture with architecture, at Lucca. When you wish to study only form and proportion, you can study the Greek; when you go to colour you must go to Giotto, who settled the school of colour for all Italy and the world. When you want to look at a fine church interior in Italy you may hie to Florence and St. Croce. And when you want to fathom rigidity you may wind up at Lucca. Like charity among the virtues, this quality is in architecture the last, the greatest, and the rarest. There are some other photographs here of about the same time, chiefly doorways of churches at Lucca and the neighbouring towns. And, in Italy, the work of this period all shows the use of the stilt, and of the circle within the ellipse. In the later times of the round arch it disappears. Then comes the Italian method of giving pointed arches from different centres, a period when in Italy sculpture stood far higher than architecture, and when the best works therein were done by painters and sculptors.

In conclusion, I would point out that spasmodic effort must always, in the nature of things, fail to produce new and living kind in architecture. If in the past architecture has faithfully recorded history, so must it in the future, if there be worthy architects to bear their part, and honest workmen to carry out. And the future of architecture concerns every man. We have entered upon a period of English history when the wants of the many have for ever superseded the luxuries of the few in the aims and efforts of men. The old governments by despots and priests are gone; let us beware that they are not replaced among the people by governments of the ignorant. The age of costly luxury, which threatened the health of Old England, as it terminated the career of old Rome, is probably passing away. Few among us here will be called upon to build cathedrals or palaces, or any works other than those which spring from peaceful industry and pleasant life. Let us see that the aims of newly-enfranchised masses are directed towards the arts of peace. There is work for all in this direction, and architecture must have its place. The future time will tell whether the present has its architects able truly to write history on the wall. The palmy days of Greece contrasted the perfect beauty of the Temple in its noblest architecture with the hovel of the peasant in its lowest squalor. In this England of ours to-day, power is passing from the *noblesse* to the masses. Art, if any is to be left at all, must belong to the people, and form part of the people, powerfully influencing by its universality their homes and lives. If once this be the case, we may be content to let the costly finery and oppressive ugliness which mark the "drawing-rooms" of the middle classes die a natural death. The mission of the architect is no longer to give expression to extravagance; to the insolence of caste, on the one hand, or of ignorance on the other, but rather to educate by the truthful, intentional, rigid houses of the poor, and to ally honest, substantial art to simple wants. If, in the immediate future, architecture is to be more than a merely curious and interesting form of past history, it must enter largely into the lives of the masses, must rear and decorate their simple homes. He who most truly reads this is most in harmony with the spirit of the age. He who succeeds best, and without affectation, in producing simple artistic work fit for the humbler domestic life in England, does most to discredit the modern shams and petty pretty trumpery which beset us on all sides, and best paves the way for a new era in English architecture, in English life, and in English greatness.

Thirty years ago the writings of Mr. Ruskin first called attention to the decay of the arts in Europe generally. His voice was the trumpet-blast which called upon men to neglect the false and follow the true. He tore to tatters the pratings of pedants, lifted the wheels out of their ancient ruts, and prepared the road for those about to enter on the journey. Above all, he taught us that the degradation of art begins exactly where the use of machine-made ornament begins. From that day to this every single architect who has produced a fine building owes its high quality (if he will but confess his indebtedness) to Mr. Ruskin's teaching. On the other hand, at no period in the history of England has there been let loose so villainous a flood of cast-brick, terra-cotta, &c., to the degradation of honest building. Now, if I have not led you into architectural technicalities, neither am I about to discuss theories, some of which, it may be, Mr. Ruskin does not now himself hold. I cannot fail to see that in these

days no writer on art neglects at some point or other to quote this great authority.

Architects alone do not, and profess to regard him as an amateur. Let us admit that fact, and yet learn from him. To his words modern architecture, I maintain, owes what little of artistic life it has. It is not necessary to take sides on the relative value of Northern and Southern Gothic, nor to agree in the utter condemnation of such buildings as Sansovino's Library at Venice. Mr. Ruskin does far more for us. We wish to see more vitality in architecture. He takes us with the most winning and musical language to Nature as our teacher. We desire a new style of architecture which shall fitly represent the spirit of the age and the wants of the time. He discusses fundamental laws which set us all thinking, thinking, thinking, yet narrows not our liberty, but leaves us to fashion our works as we ourselves may think best. We wish to know, in broad sense, the precise position and prospects of architecture now as compared with the old days of cathedrals and palaces. His living words bearing on this you may all read. They are as true now as thirty years ago. And they would be specially instructive to architects in their daily work if they would keep them in mind.

Architects read Mr. Ruskin only as an amusement, or because of his fine language and glowing periods: they revel in the colouring of the word-painter, but disdain the lessons of the teacher. They dislike him because he has an unpleasant way of plunging them out of their depth on the subject which they regard as their own. They shudder at his disrespect towards Vitruvius, Palladio, and the T-square, and at his refusal to accept the Gold Medal of the Royal Institute of British Architects; and they hold up their hands in horror at a man who has said that all good design must come from the workman. For all that, he it is who has awakened England to the dawn of a brighter day, and to whom all architects owe a deep debt of gratitude. He has much to teach. If what I have said lead to a deeper and closer study of his mind, I shall not have visited Leeds in vain.

ARCHITECTURAL SOCIETIES.

Edinburgh Architectural Association.—At a meeting of this Association, on the 21st inst., Mr. M'Gibbon, who presided, reported upon the preparations for the architectural exhibition, elsewhere noticed. He said that, while they had expected to fill three rooms with exhibits, in point of fact they had filled the whole available space, and had been obliged besides to reject some works for lack of room. A paper by Mr. Andrew Kerr on "George Kemp" was communicated by Mr. M'Lachlan. Kemp's career was traced from the cradle to the grave, and an interesting description given of his connexion with the proposed restoration of Glasgow Cathedral, together with the particulars of the competition for the Scott Monument, when success crowned the design of the unknown "John Moroo." It was also shown that Kemp secured his position by dint of study, hard work, and perseverance, and in evidence of this an interesting portfolio of his drawings was exhibited.

York Architectural Association.—A meeting of this society took place on the 21st inst. in the Saloon, Victoria Hall, Goodramgate. There was a large attendance of members to hear the first of a series of papers, contributed by members of the association, bearing upon the art and science of architecture, read by Mr. J. Perry, on the "Present Aspect of Architecture in England." Mr. Walter G. Penty, the president, occupied the chair. Mr. Perry, after referring to the position of architecture as a liberal art, and assigning to an architect the title of artist and craftsman, defined art as the visible or perceivable expression of the creative faculty of the human mind and imagination; and in referring to the architecture of York, said, "We need only take a ten minutes' walk from where we are to one of the oldest buildings in our land built by natives, and look upon a piece of undoubtedly genuine Saxon architecture." He alluded to the tower of the Church of St. Mary, Bishophill Junior. In another ten minutes, by crossing the new bridge, we can, at St. Denis and St. Margaret's Churches, see Norman work of a pure and richly decorative character; and wandering leisurely on we can in the various churches of the city see specimens of the Early English, Decorated, and Perpendicular, the Tudor, and Elizabethan styles, while in the glorious Minster we can, by careful and painstaking survey, study specimens of its numerous styles in their purity and richest beauty. On the motion of the President, seconded by Mr. Wm. Brown, a hearty vote of thanks was unanimously accorded to Mr. Perry for his paper.

Leeds Architectural Society.—This society held its annual *conversazione* on the 19th inst. It was largely attended, and there was a good display of pictures, drawings, &c. The President, Mr. J. B. Fraser, in the course of a short address, said:—"The society is now in the seventh year of its existence, and though comparatively young, I am happy to say it is vigorous and flourishing, in spite of many difficulties, one of which has been the want of a permanent home, which we have now acquired. And we now hope that our future will be one of extended usefulness, mutual help, and prosperity. Although for many years past the medical and legal professions have had their societies and associations for instruction and social intercourse, the architectural fraternity have only recently (at any rate, in the provinces) made an effort at combining for their mutual benefit as members of the same profession. Short as our existence as a society has been, we are already beginning to feel the benefit of it, and to find that, principally through its means and that of kindred associations, the public are taking more interest in the doings and sayings of the architectural world. The recent revival, or rather I should say the birth, of what is popularly known as art-feeling in this country, and which no doubt owed its origin in a great measure to the International Exhibitions of 1851, 1862, and 1867, has not only led to improved taste in the matter of dress, furniture, and other surroundings, but it has awakened a keen interest in the queen of all arts,—that of architecture. So long as an intelligent and discriminating interest is taken in our art by an educated public, so long shall we be obliged, for our own good fame and honour, to do our utmost to act up to the highest traditions of our art. Before distributing the prizes, the drawings for which are placed in the adjoining room, I feel it is necessary to point out that the want of a settled habitation has also told very seriously against the classes, and, consequently, the work produced by the students, which I feel confident will be remedied in the future, as we shall now be enabled to enter into a more systematic course of instruction under the guidance, help, and encouragement of the senior members of the profession.——The prizes were six in number, and were as follow:—A prize of two guineas, offered by the President for a design for an hotel and drawing of an old house at Shipley, was awarded to Mr. A. Gaunt; Ruskin's "Seven Lamps of Architecture," offered by Mr. John Tweedale, was awarded to Mr. Alfred Williamson for designing work done at the class meetings of the Society; an album, offered by Mr. J. R. Watson, was awarded to Frank B. Howden for designs for a settle and two chairs; Sir G. G. Scott's "Lectures on Mediæval Architecture," offered by Mr. Cribb (of the firm of Marsh, Jones, & Cribb), was awarded to Mr. J. H. Roodhouse for design in colour for the decoration of the side of a room. Two volumes on "Building Construction," offered by Major R. W. Moore, were awarded to Mr. G. Stevenson for an interior perspective view, in colour. The Science and Art Department's volume on "Building Materials," offered by Mr. W. H. Thorp, was awarded to Mr. Alfred Williamson for measured drawings of the old oak screen, St. John's Church, Leeds.

VALUE OF PROPERTY IN MAYFAIR.

LAST week, at the Auction Mart, the mansion, No. 8, Bolton's-row, Mayfair, together with other premises at the rear, known as Bolton's-yard, were offered for sale by Messrs. Debenham, Tewson, & Co. The entire area of the property is 4,080 square feet, the premises in Bolton's-row being leasehold, for the residue of a term of 973 years from Michaelmas, 1749, with an apportioned ground-rent of 5s. per annum. Of the remaining portion of the property a portion is leasehold under the same lease, the residue being freehold. On the property in Bolton's-yard there are two dwelling-houses, four coach-houses, and stabling for thirteen horses, in addition to harness-rooms. The auctioneer, in submitting the property, observed that the existing buildings were ill-adapted to the requirements of so fashionable a locality, and said that the value of the property would be very considerably increased if the present structures were taken down, and a more modern residence, with good stabling, erected upon the site. After a brisk competition, the property was sold for 8,000*l*.

ART IMPOSTORS.

SIR,—The *cause célèbre* which is at present attracting so much public attention, and more particularly the attention of artists of every kind, is, I think, one that cannot fail to be productive of some good, and, whether or not the gentleman whose artistic merit is called in question deserves the unsavoury epithet which has been applied to him, the result of the trial is likely to be wholesome and purifying. That some so-called artists and authors contrive, by a judicious application of the persuasive guinea, to secure the honours and rewards due to works which they have not executed, and could never hope to, is a fact pretty well known to most of us who make our living by our art, and that this state of things is an institution as old as it is ugly, we are told in Isaac Disraeli's "Curiosities of Literature," where some very startling instances of literary imposture are revealed. Indeed, it is pretty certain that matters have been in a much worse state than they now are, though their present condition is far enough from being a satisfactory one.

Such a trial as that now pending is probably a great surprise to many of the general public, who would scarcely expect to find the huckstering spirit rife among artists, and would never have looked for such evil-smelling reports among men of eminence and fame. To them this case will come like a revelation; and if, as will most likely happen, it determines them in future to bestow their commissions more warily,—to patronise, not the pander, but the artist,—the consummation will be a happy one.

The reason of the existence of such a state of things originates, I think, with artists themselves. It is, unfortunately, the case that business acumen is but seldom the companion of excellence in art. The artist is too often thriftless, generous, and careless in matters mundane. With the gifts of a Turner for painting, or a Foley for sculpture, he is in business affairs likely enough the inferior of any solicitor's office-boy. This fact is only too readily and joyfully grasped by those who atone for a lack of artistic merit by a decided mercantile talent, and a not too nice sense of honour,—the middle-men, in fact, whom the public so bountifully fees, and would so willingly dispense with. It is to be hoped these gentry will receive a blow where they feel it most, namely, in their pockets.

In our own profession, by which I mean architecture, middle-men are not unfrequent. By these I do not mean men who allow important work to be done by an assistant; for it is obvious that an architect may, and must receive, a far greater share of skilled assistance than would be becoming in a sculptor or painter. But I have known, and know now, of men who are utterly destitute alike of practical knowledge and artistic talent,—men who are incapable of doing anything on their own responsibility, and who yet enjoy not only a lucrative practice, but the fame which of right belongs to some retiring artist in their office, whom they in turn remunerate sparingly enough. The practice of men like these cannot but be ill-conducted in the main, and they reflect little credit on our profession as a body. Dirt, we are told, is matter in the wrong place, and these gentlemen are certainly in their wrong place. I cannot help thinking that it would have been not only better for us, but better by far for them, had they made choice of some other calling; for surely their talents are thrown away in a poor profession like ours, when, had they elected to be butchers or hucksters, they might soon have had both hands deep in the pockets of the public.

There are again within the pale of our profession men who, on the strength of knowing one or two clever draughtsmen and designers who are glad of any employment, will advertise themselves as ready to undertake any kind of work on moderate terms. Having thus obtained an order, they sub-let it to the artist upon considerably *more* moderate terms, and so realise

fat commission at the expense of the profession to which they cannot properly be said to belong. It would surely promote a healthier state of things if employers would endeavour to make sure that they are dealing with the artist at first hand, and so dispense with these agents, barnacles who stick to the bottom of the architectural craft, and who might be cleaned off with much advantage.

"The middle-man," said that aggrieved individual to Mr. *Fun*, in one of the clever series of sketches signed "J. S.," "*must* live." "*Je n'en vois la nécessité*" is Mr. *Fun's* rejoinder; and so say I, and, I think, so say all of us.

W. M.

LONDON ITEMS.

Sir, — Although for many years I have scanned my *Builder*, almost before my *Times*, I sometimes miss numbers when absent from home, &c.; therefore, if these *items* have been noticed or discussed before in or by your issues, I ask pardon:—

Item.—There is an original building of brick, stone faced, in Victoria-street, called the "Army and Navy Club,"—an ornament to the district, worth looking at. The giants,—shall I say "caryatides"?—which support the doorway arch are unique.

Item.—There is a very effective structure in Cannon-street, City, used by Spiers & Pond, *vis à vis* Bush-lane, with a "minaret tower" (?), and they have "vandalled" it by about half a dozen railway electric wires on its finial! Phuh!

Item.—There is a coping stone to the railings of a comparatively new hospital in the Barnsbury-road, perfectly soft like sand,—all friable,—so that the socketed ends of the rail irons are left high and dry! It is a curiosity. What stone can it be? It is not artificial, I know. Why, this beats new quarry Bath stone!

Item.—When will they do away with that "eyesore" opposite the Mansion House, Lord Mayor's, *i. e.*, the projecting tavern "European?" Been so forty years!

Item.—Why will not the Metropolitan Board of Works pull down that cruelly dangerous corner and block of old houses between Islington Church and Islington Green?

Item.—What wonderfully deep foundations they are digging at the site of the hotel opposite the "Grand," Northumberland-avenue!—about 30 ft. deep,—and by a steam crane or derrick (*sic* ?), like you described on the Canal, in Holland. We have magnificent hotels in London now; second to American; equal to Paris. It should seem strange, but the "wealthy world" is migratory "all the year round" in 1882.

Item.—I note that the wonderful "copper man," of the Berlin Rathhaus roof is fixed exactly on your description of the system of Japanese houses on "volcanic" soils, *i.e.*, as "a movable fixature," similar to the old mail-coach centre of gravity, below the centre; stability and movement combined "midships."

Item.—What a splendid piece of ironwork that is, the railing (wrought) in front of the New Law Courts! Quite "Spanish-Moorish." *Apropos!* What a disgrace it is that the big clock of the tower is still unfinished!—the clock of the Courts, I mean,—and this after the Queen has opened them! It has been over four years in the same condition!

Item.—Pray, sir, what are fireproof building materials? Wrought-iron twists any way, cast-iron melts right away; brick and stone are cracked, powdered, and literally "licked up," like Elijah's sacrifice, when the intense heat of white heat of great fires happens, and subjects them to only thirty minutes' calcining. I believe nothing is fireproof at highest temperature of incandescence; not even talc, asbestos, or even crucible clays, &c.

Item.—I saw the last of the old "Roman wall" (four yards thick) picked away in Broadway, Ludgate-hill. The stone actually broke in bits before the Roman cement or concrete, and I noticed there were curious wooden wedges of very "tarry" pinewood driven into the joints, in perfect preservation, after, say, 2,000 years,—kind of antiseptic action?

Item.—Nearly all the large fires of late have been at handsome, large, new buildings, *i.e.*, in London, and out of the metropolis the eight "stately homes of England" have had a "cycle" of, as it were, epidemic-burning of old, dried, scorched beams of wood let into the solid masonry, and all close to enormous fire-grates. What folly! Let us hope a lesson has been learned for thorough universal scrutiny and also alteration in the mansions. Excuse long letter, my last to you in 1882. Adieu!

London Argus.

MANAGEMENT OF COMPETITIONS.

Sir,—Seeing that the Cheltenham Gas Company are again advertising for tenders for new offices, I enclose lists of Tenders which I obtained for the directors for the carrying out of my design for the same building (which was accepted in the first competition), trusting that you will publish them for the benefit of the contractors who again meditate tendering.

I have given my reason for resigning the position of architect at the foot of the list of tenders.*

A. Smith.

First List.—Dated the 26th day of May, 1882.

For the erection of offices, with residence, at Cheltenham, for the Cheltenham Gas Light and Coke Company. Quantities by the architect, Mr. Alfred Smith, Mitcheldean, Gloucestershire:—

Bennett, Birmingham	£13,840	0	0
Wingate, Gloucester	13,825	0	0
Jones, Gloucester	13,750	0	0
Bowers & Co., Hereford	11,500	0	0
Bradney & Co., Wolverhampton	11,380	0	0
Veals, Bristol	11,349	0	0
Smith, Leamington	11,300	0	0
Scamell, Cheltenham	11,035	0	0
Coleman Bros., Chaxhill	10,835	0	0
Forse, Bristol	10,700	0	0
Howell & Son, Bristol	10,700	0	0
Collins, Tewkesbury	10,680	0	0
Billings, Cheltenham	10,525	0	0
Foster, Abergavenny	9,500	0	0
Miller, Carr, & Co., Birmingham	9,495	0	0
Pickthall, Bromsgrove	8,840	0	0
Inwood, Malvern	8,441	0	0
Architect's Estimate	9,162	0	0

Second List.—Dated the 2nd day of June, 1882:—

Bennett, Birmingham	£9,278	0	0
Smith, Leamington	8,867	0	0
Scamell, Cheltenham	8,554	0	0
Veals, Bristol	8,552	0	0
Forse, Bristol	8,475	0	0
Coleman Bros., Chaxhill	8,354	0	0
Foster, Abergavenny	8,260	0	0
Jones, Gloucester	8,147	0	0
Billings, Cheltenham	7,718	0	0
Collins, Tewkesbury	7,670	0	0
Inwood, Malvern	7,091	0	0
Miller, Carr, & Co., Birmingham	6,838	0	0
Pickthall, Bromsgrove	5,940	0	0
Architect's Estimate	7,021	0	0

Third List.—Dated the 1st day of July, 1882:—

Bennett, Birmingham	£7,893	0	0
Bowers, Hereford	7,800	0	0
Jones, Gloucester	7,550	0	0
Bradney & Co., Wolverhampton	7,439	0	0
Smith, Leamington	7,167	0	0
Forse, Bristol	6,625	0	0
Foster, Abergavenny	6,350	0	0
Coleman Bros., Chaxhill	6,249	0	0
Veals, Bristol	5,994	0	0
Scamell, Cheltenham	5,994	0	0
Billings, Cheltenham	5,965	0	0
Miller, Carr, & Co., Birmingham	5,961	0	0
Architect's Estimate	6,141	0	0

FIREPROOF WAREHOUSES.

Sir,—Soon after the great fire in Tooley-street I showed to Alderman Humphery, the Editor of the *Builder*, and others, the model of a warehouse that could not possibly burn down. The name adopted was that of "the tank warehouse." A brief description of the idea will, I imagine, suffice to prove its indestructibility by fire, however numerous the stories or floors of such building. All openings to the floors should be elevated a foot or a foot and a half above such floors, where goods are taken in or where staircases open. The floor would then form a shallow tank, so that each such floor could be filled with water to the depth of a foot or more that could not run away. In the walls of the building, round holes might be cut covered with thin glass, where there are no windows. Now, in case of fire, the engines would pour water into every floor, and there would be so many tanks of water to prevent the spread of fire, provided the floors were properly constructed. The water from the fire-engines would, of course, be poured into the building through the windows or holes. In such buildings where there are hollow columns of iron, these should be always kept filled with water, having a small hole near the top fitted with a wooden plug. If in a fire this column became heated to excess it would act as a common boiler, generate steam, and thrust out the plug mentioned. It is evident that so filled with water such column could not become red hot and so add to the fire. I am neither builder nor architect, but simply an amateur in these matters, and, therefore, for the sake of preventing the recurrence of such terrible fires as we have recently witnessed, and without any *arrière pensée*, I beg a small space in your highly scientific columns.

J. J. Lockhart.

* Mr. Smith resigned the office of architect in consequence of the directors refusing to accept any tender after putting the contractors and himself to the trouble of supplying and obtaining three separate estimates.

PROTECTION OF IRON GIRDERS.

Sir,—I have taken out a provisional patent for the purpose of protecting iron girders from fires. The recent fires in Wood-street have shown that the expansion and distortion of the iron girders as there used have been the cause of upsetting walls and of rendering it perfectly unsafe for the firemen or the salvage corps to get about after the fire had got any hold of the buildings. If you have seen the ruins after the fire you must have noticed that many of the iron girders are positively burned in two and part consumed. Now, as the greater part of these Manchester warehouses are built in the same way, I am desirous of bringing my patent before your readers that the professional men employed to rebuild may know that in a simple and inexpensive way the girders can be constructed so that in case of fire, no matter how fierce, the girders can be kept cool and in their places, steadying the party walls (even should the roof and all the woodwork of the floors have been consumed), and not acting as levers to throw them down, as appears to have been the case in the fire referred to. The specification herewith will, I think, show tolerably clearly what is intended.

I propose all the girders are to be box-girders communicating with each other, that a main should communicate with the girders and fill them with water, that perforations are made in the side of the girders to allow the water to pass through, and so a continual running stream of cold water from the main in the street is passing through at a rapid rate and keeping the girders cool. Should the usual matchboarded partition be under the girder the water would prevent its burning as freely. The iron doors in the division walls I propose to protect by having smaller girders for lintels, and allowing a stream of water to constantly pour down on each side of them.

John M. Hooker.

FIRES IN THEATRES.

Sir,—I should like to suggest a remedy for one of the chief difficulties to be contended with in extinguishing fires, viz., the immense quantity of gas which is escaping through the broken pipes, &c. If in the pathway outside every theatre and large public building a stop-cock were fixed on the service gas-pipe, encased in a locked box, but easy to get at, the fire brigade men would be able to turn the gas off effectually.

Ernest van Putten.

The Proposed Roman Catholic Cathedral of Westminster.—At length it would seem (says the *Times*) that there is some prospect of the erection of this long-contemplated edifice,—one on which Cardinal Wiseman set his heart,—being realised under his successor, Cardinal Manning. It is only just and right, however, to say that when urged, on his accession, to take steps for inaugurating such a work, Cardinal Manning steadily refused to do so, saying that he would be content without a sumptuous edifice of the kind as long as there was a want of schools to receive the little ones of his flock. Even this result he has not yet beheld, though year by year he is able to boast that he has done something towards overtaking the deficiency. Some six or eight years ago, however, the site for the intended cathedral,—about two acres and a half,—between Vauxhall Bridge-road and Victoria-street, was purchased, with a view to future building operations, and Mr. Henry Clutton was commissioned to make a design for the cathedral. But within the last few months it appears that a further step has been taken in the matter. Sir Tatton Sykes, of Sledmere, a wealthy Yorkshire squire, has been seeking to be received into the Roman communion, and has notified to Cardinal Manning his desire to mark his reception into the Church by the spontaneous offer to build the new Westminster Cathedral at his own cost; and it is understood that he has chosen as his model the votive church of St. Saviour at Vienna, erected to commemorate the escape of the Emperor of Austria from an assassin's hands.

LIBELLING A BUILDER.

AT the Central Criminal Court, on the 15th inst., Henry Ashford, 44, a builder's clerk, was indicted for publishing a malicious libel of and concerning Mr. Edward William Bradwell. The case was reported in the *Builder* on the occasion of the initial proceedings at the Police Court (see p. 635, *ante*).

Mr. Grain and Mr. J. Watson prosecuted; Mr. Montagu Williams, Mr. Lynch, and Mr. Goodrich defended.

In opening the case for the prosecution, Mr. Grain said that, justification having been pleaded, the trial would turn out one of considerable importance and gravity. The prosecutor carried on business in Great Portland-street, and was well known in the theatrical world as a builder and decorator of theatres. In 1878 the St. James's Theatre became the property of the Earl of Kilmorey, who was then Lord Newry, and he employed the prosecutor to alter the theatre, and practically to rebuild it. At that time the prisoner was a clerk in the prosecutor's employ. When the work was completed, it came to nearly 8,000*l.*, and, deducting the sums paid upon the certificates of the architect (Mr. Verity), there remained a balance of 3,000*l.* due from the Earl of Kilmorey. An action was brought to recover the money. It was referred by the Lord Chief Justice to Mr. Dowdeswell to investigate the facts and accounts. Prosecutor's books were time after time examined, and it was ultimately arranged by the experts appointed by Mr. Dowdeswell to take the prime cost of the materials and labour, adding 15 per cent. as a proper percentage for the builder, and it was upon this basis that Mr. Dowdeswell eventually made his award, which was for a considerable sum. The Earl of Kilmorey had brought a counter-claim against the prosecutor for 1,000*l.* or 2,000*l.* for the delay in completing the building, but this was dismissed with the nominal damages of 40s. and no costs. Judgment was given for the prosecutor in August or September last year, the amount and costs were all duly paid, and nothing further was thought of the matter until September last, when the prisoner left the prosecutor, and, applying for a situation with another builder, the latter wrote to the prosecutor for the prisoner's character. What the prosecutor considered to be a fair and honourable character was given, but, further explanations being required, the prisoner threatened that unless he gave him the character he would say that he (prosecutor) had falsified his books in the matter of the Earl of Kilmorey. The prosecutor took no notice of this, but, to his surprise, he received from Mr. Dowdeswell a copy of the letter he had received from the prisoner, in which he charged him with falsifying his accounts of the prime cost of the building for the purposes of the arbitration. A similar letter was sent to the Earl of Kilmorey and to others.

A number of witnesses were called, and after an intimation from the Recorder, the prisoner pleaded "Guilty," and was bound over in his own recognizances in 100*l.* to come up for judgment if called upon.

CAUTION TO BUILDERS.

BAD MORTAR.

AT the Worship-street Police-court, on the 21st inst., Mr. Bushby gave judgment in a case between the Metropolitan Board of Works and S. Muncey, builder, Hackney Wick.

In August last, at the same police-court, proceedings were taken by Mr. Alexander Payne, the District Surveyor of East Hackney (South) and North Bow, against the defendant, for using mortar not composed of good sharp sand without earthy matter, as required by the By-laws of the Board, in which case the defendant was fined 60s., as reported in our columns; but the defendant continued to use inferior mortar, and proceeded to complete the buildings without pulling down any of the condemned parts. The Metropolitan Board of Works was therefore driven to take proceedings under the Metropolis Management and Building Acts Amendment Act, 1878, for an order to pull down the houses. The case first came on on the 2nd of November, and was adjourned several times on technical points raised by the defendant's counsel. On the 30th of November the case for the prosecution was heard. Mr. Besley appeared on behalf of the Metropolitan Board of Works, and stated that the Board, having regard to their duties to the public, felt that the fine of 60s. already imposed would not cure the evil, and ensure the use of good mortar in the future: it was, therefore, necessary for them to ask for an order to pull down, under sec. 17, Act 1878. He then called

Mr. A. Payne, the District Surveyor of the district, who produced specimens of the mortar and material used for sand, and gave the dates of his various inspections of the buildings. The mortar was not such as is required by the By-laws, as it was not composed of clean sharp sand, and was full of earthy matter: it easily crumbled, and did not adhere to the bricks, and when put into water dissolved into something like mud. There had been no improvement in the building, nor had any part been pulled down.

Mr. Blashill, District Surveyor of the adjoining district, was then called, and stated that he had inspected the buildings with the last witness on the 27th of November, and taken specimens of mortar from the back addition. The mortar was not in accordance with the Board's By-laws. There was some gritty substance in it, but there was also earthy matter, and it did not hold together nor adhere to the bricks: houses built with such a material would be more damp and unhealthy than if built with proper mortar.

This concluded the case for the prosecution.

The defendant's counsel, Mr. R. B. Muir, then asked the magistrate to take down the following objections:—(1.) He maintained that proceedings could not be taken against the builder after he had completed the work: they should be taken against the occupier; (2.) That the By-laws were *ultra vires*, as under sec. 12 (1855) the Board had no power to make By-laws about mortar; (3.) That the notice of the District Surveyor was not explicit enough in specifying what part of the buildings was to be pulled down. He then said he would show that the mortar was in accordance with the Board's By-laws.

Mr. Uriah B. Broadribb was called, and said he was a surveyor, and manager to Messrs. Reddall & Sons. He had superintended the building of the houses on this estate; he had no fault to find with the mortar from these houses. He produced a sample taken from the back additions: the quality was rather variable. He should say that, according to the cottage sort of property, they were of first-class construction.

Cross-examined by Mr. Besley.—He said he had no specimens on that day from the main building; he had given evidence on the former occasion when the defendant was fined 60s. In his opinion that was a wrong judgment, and no part of the buildings had been taken down. Mr. Muncey only found the labour on this job, the freeholder found the materials. Witness saw a barge-load of sand brought to the job; this was at the beginning of August; the main walls were then up. Being asked as to where the sand came from before that time, he mentioned a lot of concrete that had been taken from various roads; it was not his province to superintend the mixing of the mortar.

Being asked by the Magistrate, he said the name of the freeholder was Mr. J. F. Raw.

Mr. S. Muncey, the builder, was called, and stated that the mortar was composed of Thames sand, mixed in the proportion of two or three of sand to one of lime; there was also a small portion of sifted ballast mixed with it. He was finishing these houses by day-work; the money was advanced by a solicitor, Mr. Raw, at so much a week; he had given notice to Mr. Payne, as builder; he was fined 60s. for this mortar, but had not pulled down any part of the buildings; he had had four barges of sand to these houses; there was no perceptible loam in the mortar.

Several workmen were then called, and deposed to having mixed the mortar and carted sand on to the job, but they could give no dates.

A local builder was called, who produced a specimen of the mortar, which he said was good. In cross-examination, he stated he had served his apprenticeship as a carpenter, but had had a great deal of general experience, and had been the foreman of large works.

The District Surveyor was then recalled, and said he had examined the specimens submitted for the defence, and that they contained earthy matter, nor was there any evidence of good Thames sand about them.

Mr. Blashill was re-examined, and said that these specimens did not contain Thames sand, and that there was dirt and earthy matter in them.

The Magistrate said he would examine the specimens and give judgment on that day week (December 21st).

Mr. Besley, for the Metropolitan Board of Works, said that if his worship liked to call in the assistance of a professional adviser, he would agree, on behalf of the Board, to pay half the expense whichever way it went.

On December 21st, the magistrate said that an analysis of this mortar would cost 21*l.*, and that if either side were willing to pay for this he would have it adjourned to see the result; otherwise, he was willing himself to give judgment from the evidence and from the specimens he had seen.

Mr. Burton, who attended on behalf of the Metropolitan Board of Works, said he was quite willing to accept his worship's judgment.

Mr. Raw, on behalf of the defendant, said he was perfectly willing to accept the magistrate's judgment, presuming that if he decided in favour of the Board he would allow the points he had raised to be brought before the Superior Court.

The magistrate then referred to the points, namely, as to whether the builder was the right party to proceed against, and whether the By-laws were *ultra vires*, and thirdly, whether the notice was vague. He said he could not grant a case upon them. He did not like to send up to the Court of Queen's Bench points which they would pooh-pooh at once. The defendant would have to apply for a *mandamus*. The magistrate (Mr. H. J. Bushby) then delivered judgment. He said he had heard the evidence and had examined the specimens of the mortar produced; some of these crumbled in the hand. It was no answer for the defendants to bring other specimens which did not crumble, unless they could show that the specimens brought by the prosecution were not taken from their houses which they never ventured to do. Therefore, he ruled that these buildings had not been constructed of solid strong mortar according to the meaning of the Act, and he gave the order as prayed for.

Mr. Burton then, on behalf of the Board, asked for costs.

The magistrate said he was not in the habit of granting costs, except where there was something like wilful misfeasance; but in this case there really was something like that, because there had been a previous order and fine inflicted in consequence of this mortar having been adjudged to be bad; but not the slightest action had been taken by the defendant, thus compelling the Board to take fresh proceedings. He should therefore grant the costs, but they would be limited to the costs of one day.

RIGHT OF BUILDINGS TO SUPPORT BY SUBTERRANEAN WATER.

WARING *v.* THE PANDORA THEATRE COMPANY.

IN this case, which came before Mr. Justice Fry (Chancery Division, December 21st), the plaintiffs were the owners and tenants of a house, No. 3, Leicester-street, which is situate next to property on which the Pandora Theatre Company have commenced building their proposed theatre. The plaintiffs sued in respect of danger and injury to their house by the abstraction of water from under their foundation.

This was a motion for an interlocutory injunction to restrain the pumping of water from excavations which the defendants' builders have made. No complaint was made in respect merely of the excavation, but the evidence showed that, owing to the abstraction of water, the house had already greatly cracked and was dangerous, and it was sworn that, in the opinion of the plaintiffs' witnesses, if the pumping were continued it must come down.

Mr. Norton, for the defendant company, insisted that they were, on the authorities, acting within their strict rights, drawing a distinction between a right to support from adjoining land and from water.

Mr. Justice Fry said a curious and interesting question was raised as to whether the right which the owner of an old house had to support from the adjacent land extended also to water. He was not going to decide that question on the present occasion, but, on the balance of convenience, he was of opinion that he must grant an injunction on an undertaking by the plaintiffs as to damages. He thought if it were not granted the house would undoubtedly suffer great injury; on the other hand, he thought he had sufficient acquaintance with building to know that if this mode of proceeding was stopped, some other mode of constructing these works would be found and adopted by the defendants' architects and builders.

PROVINCIAL NEWS.

Leeds.—Since the Town Council sanctioned the project for providing Leeds with a new cattle-market at Copley Hill or Whitehall-road, the necessary preliminaries have been going forward. The land has been bought and paid for by the Corporation, and the authorities are making the best terms they can with the owners and occupiers of the property which will be required. When the contracts are to be let is said to be a matter which will be settled before long. In the meantime, the butchers, slaughter-house proprietors, and others who have from the outset resisted every proposal to take the market away from North-street, do not seem to be relaxing in their endeavours to thwart the proposals of the Town Council. The more prominent opponents of the scheme are said to have come to the conclusion that the attention which the Markets Committee and its sub-committees have latterly been paying to the slaughter-house branch of the question means that the new market will prove to be the thin end of the wedge, and that the addition of an abattoir may very soon be regarded as inevitable.

Manchester.—The Corporation of Manchester having obtained power, by an Act passed last session, to acquire and maintain an art gallery, the Royal Institution has passed into the hands of the Council. The managing committee will consist of twenty-one gentlemen, of whom fourteen are to be elected annually by the Corporation and seven by the governors of the Royal Institution. Various alterations will be made in the interior of the building for the purpose of increasing the space, and when these are effected a second art gallery or museum will, ere long, be provided in Queen's Park, an offer having been accepted by the City Council from the Manchester Art Museum Committee of

pictures and works of art valued at about 5,000*l*.

Whitchurch (Salop). — The new workhouse chapel was opened on the 1st inst. The building, which is situated on the north side of the workhouse, is described as having been built in the old English brick and half-timber style. It is made to accommodate 130 persons, and is 60 ft. long and 20 ft. wide. The building comprises porch, nave, vestry, chancel, and baptistery. It has an open roof, which is constructed of pitch-pine. The principals are framed into upright pillars brought down to the ground; against these pillars corbels are placed to receive the moulded circular ribs which span the nave. The seats are framed with simple ornamental ends in pitch-pine. The pulpit is framed oak upon a plain base of Caen stone; the centre panel is carved, and the corners contain portraits of the four Evangelists, painted on china. The bowl of the font, it is said, was originally used at the old church, Middlewich, and was presented to the workhouse some time since by Mr. B. L. Vawdrey, of Tushingham Hall, and has been mounted on a suitable base and pedestal of statuary marble. In the chancel is a stained glass window, the subject treated being our Saviour restoring the sight of the blind beggar on his way to Jericho. This is the gift of the Rev. J. H. Brooks, of Steeple Aston Rectory, who entrusted its execution to Mr. John Davies, glass stainer, Shrewsbury. The building itself, erected at a cost of about 700*l*., is the gift of Mr. Wm. L. Brookes. The chapel was designed by and carried out under the superintendence of Mr. Walter Webb, architect, of Shrewsbury. The builders were Messrs. Corfield & Dodd.

CHURCH-BUILDING NEWS.

Christchurch, Hants.—A new roof has just been placed over the north transept of the Priory Church, Christchurch. It is open-timbered, and in character with the other later Mediæval roofs in the building, *i.e.*, of tie-beam construction with moulded purlins, plain in design, but with very substantial timbers of English oak, and covered with 8 lb. lead. The parapet on the west side has been taken down where necessary, and the old stones carefully reset, as well as the internal stone cornice, which has now been properly bonded. The work has been under the superintendence of Mr. B. Edmund Ferrey, and carried out by Mr. William Howe, of Christchurch.

Whalley Range (Manchester). — The new Church of St. Edmund, which has been erected in the Alexandra-road, Whalley Range, was consecrated by the Bishop of Manchester on the 20th inst. The foundation-stone of the building was laid by Mrs. Fraser on the 29th of July, 1881. The church is built of brick, with Yorkshire stone facings and white stone dressings, and is in the Early English style of architecture. It consists of a nave, 100 ft. by 36 ft., and two aisles, each 95 ft. by 13 ft. 6 in. Vestries for the clergy and the choir are situated on the south side. The chancel, which is lighted by seven tracery-headed windows, is 38 ft. long by 25 ft. wide, and has a tiled floor. There is an organ-chamber on the south side of the chancel, with which it is connected by a large moulded archway. The chamber is a spacious one, and is lined throughout with boarding. The tower, which is situated at the north-east corner of the church, and the lower part of which forms one of the principal entrances, is at present incomplete, owing to lack of funds. When finished it will rise to a height of about 170 ft., and terminate with a wrought iron finial. There is another entrance to the building at the north-west corner. Each entrance has a spacious vestibule, and is furnished with two pairs of swing doors, which prevent the possibility of inconvenience arising from draughts. Two extra doors have been provided, but these will only be used for exit purposes. The nave arcade, which is lofty, is supported on polished granite columns, with Yorkshire stone caps and bases. The side aisles are lighted by means of two tracery-headed windows, and the nave by twenty-eight similar windows. At the west end there is a large and very handsome six-light window, with a rich tracery head. Special attention has been given to the important matter of ventilation. The font, which cost 40*l*., and was specially designed by the architect, has been presented to the committee by Miss Lees, of Whalley Range. The lectern, consisting of brass and iron scroll work, was given by the members of the Iron Church congregation. The pulpit and the reading-desk consist of pitch pine, the panels being filled in with open tracery resting on stone bases. The seats, which have been designed to accommodate 1,000 worshippers, are also constructed of pitch pine. The builder was Mr. James Herd, and the whole of the work has been carried out from the designs and under the superintendence of Mr. Henry R. Price, architect, Cross-street, Manchester.

Whitworth. — A new Mission Church is in course of erection in St. Bartholomew's parish, Whitworth, near Rochdale, and is expected to be ready for opening early in the ensuing spring. Messrs. Cheetham & Duncan, of Rochdale, are the architects.

Books.

A Series of Twelve Sheets of Pen and Ink Sketches of the Old Domestic Architecture of Oxford. By H. W. Moore, 6, Beaumont-street, Oxford.

These sketches are published with the view of preserving a memento of the picturesque examples of old work to be found about the streets of Oxford. They are of the style which has recently become fashionable after entire neglect for years, and some of the subjects, though originally public-houses in back yards, will probably be adopted as types for residences in fashionable localities.

VARIORUM.

The *Estimator's Journal*, published by Batsford, High Holborn, is a Monthly List of net cash prices for building materials required in estimating, net trade lists, &c. Whether changes often take place in a month we are not prepared to say, but they may, nevertheless, occur often enough to justify the trifling outlay involved. It is edited by Mr. George Stephenson, of Hampstead.——A bundle of Diaries and Calendars come to us from Charles Letts, and very good and various in character they are. They must be distinguished in ordering from those of Letts & Co.——"Whitaker's Almanack," 1883, includes such a body of original information as is scarcely to be found elsewhere. It grows in size every year.——Amongst the Diaries comes one in connexion with the *Sanitary Record*, intended specially for the medical practitioner. The blank space left for each day must be ridiculously too small for a medical man in good practice. The introduction of advertisements on the blotting-paper (chiefly of wines and spirits) is an abomination that cannot be too soon pronounced against.

Miscellanea.

Fire at Gunton Hall.—On the 18th inst. Gunton Hall, the seat of Lord Suffield, was to a large extent destroyed by fire. The hall was a handsome white brick mansion standing on a slight eminence about midway between Aylsham and North Walsham. It had been enlarged by successive generations of the Harbord family. Before the engines of the local fire brigades began to play upon the burning pile, much time had been lost, and the flames had acquired such a hold upon the mansion that the utmost which could be done was to save a portion of the building. Most of the pictures were removed in safety, and a considerable portion of the furniture was also rescued from the flames, but some was destroyed. The new front of the hall was destroyed, and, in fact, the greater part of the mansion became a mere wreck. The damage done is roughly estimated at 30,000*l*.

Presentation Casket for Lord Wolseley. The General Purposes Committee of the Corporation selected the design submitted by Messrs. George Edward & Sons, of the Poultry, from among those sent in by the leading goldsmiths of the City and the West End. The casket is of gold, and both in its shape and ornamentation is Egyptian in style.

Chief Assistant in the Engineer's Office, London.—We are asked to mention that, although on the first show of hands, the numbers were: Mr. De Pape, 28; Mr. D. J. Ross, 33,—as stated in our paragraph,—at the ultimate voting the numbers were: for the first-named gentleman, 13, and for Mr. Ross, 35.

The Fatal Accident on the Site of the Wood-street Fire. — On the 20th inst. Mr. Payne resumed the inquest on the body of John Turner, aged 34, a locksmith in the employment of Messrs. Chubb & Co. On the 12th inst. he, with other men, went into the ruins of the great fire in Wood-street, with the object of opening the door of an iron safe which had fallen from one of the upper floors of Messrs. Rylands's warehouse. Just as they ceased hammering at the door of the safe, a huge wall fell a depth of 30 ft. on the deceased, crushing him to death. The witnesses, in reply to inquiries by the Coroner and the jury, stated that they received no caution of any sort from anybody as to the dangerous condition of the ruins. Mr. William Wollett, architect and surveyor, employed by the fire insurance company in such cases as these, said, if he saw any one going into a ruin of the kind in Wood-street, he should warn them, as it would be sure to be dangerous. In reply to Mr. Nicholls (who appeared for Messrs. Rylands), the witness said no one was absolutely in charge of the ruins of the fire until a surveyor had been appointed by the Fire Insurance Company. Up to a certain time the premises on fire were in charge of the Fire Brigade and the police. The Fire Brigade would give notice to the District Surveyor if the structure was dangerous. Replying to Mr. Farrar (who appeared for Messrs. Chubb), the witness said he had ordered that no one should be allowed to go into the ruins except the Salvage Corps, the police, and workpeople. The Coroner.—In your judgment, as a practical man, do you think the hammering at the safe on the Monday and Tuesday affected the wall in question in its then weak condition? Witness.—Of course it would. The least touch would tend to bring it down. Police-sergeant Phelps said he admitted Messrs. Chubb's men within the hoarding at the end of the street on one of the men's producing a card of the firm. The police had no power to keep the workpeople out of the ruins, although the walls were dangerous. The men, they assumed, knew the risk they were running. Mr. D. Cameron, representing Mr. Woodthorpe, the District Surveyor, said that when it was known that the walls of the premises were dangerous, a notice was sent to the Commissioners of Sewers for a builder to go and do what was necessary,—to first see to the outside walls. The jury returned a verdict "That the deceased was accidentally killed by the falling of a wall. They added, as a rider, "We wish to express our strong disapprobation of the absence of necessary precaution in regard to the dangerous character of the buildings."

The Birmingham and Aston Steam Tramway.—The new line of tramway which has been in course of construction during the last few months between the centre of Birmingham, and Aston, by way of Corporation-street, Aston-street, Aston-road, and Lichfield-road, has now been completed and opened for traffic. On the 22nd inst. the official inspection by Major-General Hutchinson, of the Local Government Board, took place. The company have determined to use steam-power for working the line instead of horses, and for this purpose have already purchased two engines, one by Messrs. Kitson & Company, of Leeds, and the other by Messrs. Wilkinson & Co., of Wigan. In many other towns where tramways have been more extensively brought into use than in Birmingham, steam has been adopted as the motive power with varying success.

Disastrous Fall of a Chimney in Bradford.—On Thursday morning the high chimney of a mill situate in Spring Mill-street, Bradford, fell upon the adjoining building, where a large number of persons were at work. It is reported that at least twenty-four persons were killed, and that forty were seriously injured. The chimney is stated to have been built in 1861, on the site of some coal workings, which were filled in with stone packing and concrete. It was 255 ft. high. Signs had exhibited themselves of weakness at the base, and men are said to have been engaged in trying to remedy the defects when the disaster took place. Was this work, affecting the safety of so many poor factory "hands,"—many of them women and children,—being done under competent advice and supervision?

"**Land Surveying and Levelling.**"—Mr. A. T. Walmisley will deliver the opening lecture of his course of eight lectures on this subject, in connexion with the Society of Engineers, in the Hall of the Society, 6, Westminster Chambers, on Monday, January 8.

Work and Wages in the Brassfoundry Trade.—It is stated that for some time past the National Society of Amalgamated Brassworkers have been endeavouring to induce the employers to advance the wages of the operatives, and to restore the bonus which was formerly paid to the workmen. During the depression in the trade two or three years ago the 15 per cent. bonus usually paid on the list prices was reduced to 10 per cent. by the arbitrator, and the men on the revival of trade last summer asked that the bonus should be fully restored, and also that a general advance of 10 per cent. in wages should be conceded. An alteration in the minimum prices of the casters in the general cabinet department was also asked for. The operatives contend that from time almost immemorial it has been the custom in the trade to consider that casters should receive one price for their work, this price being regulated by weight. Gradually this custom has been encroached upon, they say, and for many years past different prices have been paid at various firms for the same class or work. In some instances casters employed on light work have been paid less than others who produce heavier goods. Their greatest claim for a levelling-up of prices paid to the casters, however, is that for the last twenty-five years patterns have been considerably reduced in weight by the coring of work which was previously cast solid, also by the patterns being reduced to meet manufacturers in competing with each other, or to conform to the fashion in the more artistic branches of the trade. This process of lightening patterns has, they urge, considerably reduced the earnings of casters. The increased number of cores has also had the same effect, inasmuch as journeymen casters fail to obtain help unless they are prepared to give at least 50 per cent. more to their under-hands than formerly. After a careful consideration of the claims of the operatives the representative employers in the brass cabinet department have agreed to the requirements of the men for raising the minimum price paid to the casters, and they also promise to favourably consider the question of the bonus. It is thought that the decision will give satisfaction to the men affected. The question of a general advance of 10 per cent. to the whole of the brassfounders has been deferred, the employers being desirous of waiting till the turn of the year in order to see whether the state of trade will justify any advance of wages.

A Large Ocean Dock. — The City of Adelaide, South Australia, has (according to an exchange) taken steps for the construction of an ocean dock of nearly 30 acres in extent, and 30 ft. deep at low water. The site is said to be excellently chosen, and the approach will be of the easiest character. The dock will afford harbourage for vessels of the largest class, and will be provided with the most modern appliances for docking, loading, and discharging vessels in all states of the weather. Railway communication between Adelaide and Melbourne is being established, and already a line of rail connects the capitals of Victoria and New South Wales, so that within a few years passengers and mails will be landed at Adelaide for all parts of Australia, and will reach their destination by rail, whilst the goods for other colonies will be discharged into intercolonial steamers of a class much superior to those now running. The capital for this enterprise, amounting to nearly a million, is to be provided by private persons.

Fall of a Mill Chimney at Batley.—On the 19th inst., about half-past eight o'clock a.m., a chimney in course of erection at New Brighton Mill, Carlinhow, Batley,—the scene of the disastrous boiler explosion which occurred on January 19th, 1881, whereby sixteen persons lost their lives,—fell to the ground with a loud crash. The chimney had attained a height of 114 ft., and is described as being substantially built of brick, the work being carried out by Mr. John Mortimer, contractor, Batley. It was intended to carry it to 150 ft. in height, but a few days ago it was noticed that the chimney was losing its perpendicular, and in consequence work was suspended. Fortunately, no one was injured, although several workpeople were near at the time.

The Belt Libel Case: Verdict.—This prolonged case, which has occupied forty-four days, was brought to a conclusion on Thursday, when the jury returned a verdict for the plaintiff, Mr. Belt, awarding him 5,000*l.* damages. The judge refused to stay execution.

A Leviathan Lathe. — Messrs. Smith, Beacock, & Tannett, of the Victoria Foundry, Water-lane, Leeds, have just completed a large treble-geared crank axle lathe, which has been made for a marine engineering firm in Marseilles, where it will be used for turning marine cranks, shafts, &c. It is (says the *Yorkshire Post*) probably the largest piece of work of its kind which has ever been constructed in Leeds. The height of the centres above the bed is 5 ft., so that an article 10 ft. diameter can be turned with the lathe. The face plate, which is 10 ft. 4 in. in diameter, is provided with jaws for gripping the work. The lathe-bed is 9 ft. wide, and is sufficiently long to allow a space of 34 ft. between the centres. There are two saddles, each with compound slide-rests, back and front, and having self-acting motions in all directions. The latest improvements have been adopted in the construction of the lathe. Amongst these may be mentioned the introduction of two screws within the bed, the advantage of this over the ordinary system of traversing the saddles by one screw or by a toothed rack and pinion, being that, with so wide a bed, the saddles slide more smoothly than they would otherwise do. Both the saddles and the loose headstock are moved quickly on the bed by a separate strap from that which drives the lathe headstock, and by this arrangement the necessity of running the driving-gear of the headstock to move the saddles and the loose headstock to their places for commencing work is obviated. Some idea may be gathered as to the immense proportions of the lathe when it is stated that its total weight is about ninety tons.

Italian Art Loan Collection at Glasgow.—On the 22nd inst. the Italian Art Loan Exhibition, in the Corporation Galleries, Glasgow, was opened by Lord Balfour of Burleigh. It is one of a series of exhibitions held under the auspices of the Corporation. The Queen has lent a number of valuable objects, including a shield by Benvenuto Cellini, which is valued at about 5,000*l.* Mr. Gladstone has sent three large glass cases containing fine carved ivories and beautiful examples of Italian jewellery. The Duke of Buccleuch has furnished a rare lot of prints by old Italian masters, Marc Antonio Raimondi, Agostino Veniziano, Agostino Caracci, and others. From the Marquis of Lothian has been received a collection, which comprises some specimens of Italian furniture and pottery. By Mr. J. C. Robinson, her Majesty's Surveyor of Pictures, there has been contributed a series of Italian medals, embracing examples of the work of Pisano, Pasti, Guaccialotti, Sperandio, &c. Messrs. Elkington & Co., London, have lent the well-known Helicon Vase, which, although produced by the French artist Ladeuil, is entirely in the style of the Italian Renaissance. Composed of *répoussé* silver and steel, damascened with gold, the vase represents the work of several years, and is valued at 6,000*l.* Perhaps one of the most interesting features of the display is a set of fifty drawings by old masters,—many of them preliminary studies for famous works of art,—from the gallery of Mr. J. Malcolm of Portalloch. Sir Noel Paton, Sir W. Fettes Douglas, and a large number of other collectors have also sent contributions.

The Proposed Riverside Fish Market at Shadwell.—At the last meeting of the Limehouse District Board of Works, Mr. Potto asked Mr. Dunch, the surveyor, what was the present position of the Shadwell Fish Market Scheme, as he thought it would be well that the public should know how the matter stood, and whether the difficulty that had arisen in regard to the financial part of the scheme would be such as to prevent the formation of the market. Mr. Dunch said the Board would remember well the difficulties that had to be surmounted in obtaining the Act authorising the establishment of the market, and knowing what influence was brought to bear, it was not likely that the parties who opposed the measure would desist from their efforts to discredit it, and thus prevent the market being carried out, or cause the absorption of it by the City authorities. This opposition, combined with the circumstance that mistakes had been made in drawing up the prospectus of the company, had prevented the subscription of the whole of the capital. But the project to establish the market had not collapsed. It was not intended that it should collapse, and other steps would be taken togive effect to the London Riverside Fish Market Act, 1882.

Institution of Civil Engineers. — The sixty-fifth annual general meeting of this institution was held in Great George-street on the 19th inst., Sir William Armstrong, C.B., F.R.S., the out-going president, being in the chair. The report of the Council on the proceedings of the Institution during the past year congratulated the members on the steady progress of the Society, which showed no signs of diminution. Since the close of the last official year 238 candidates had been elected, ninety names had from various causes disappeared from the register, leaving a net gain of 148, which had increased the aggregate of all classes to 3,385, irrespective of the students, who numbered 707. The publications had been continued on the same liberal scale, four thick octavo volumes having been issued during the year. Some interesting particulars were given of the growth of the publications, special reference being made to the development of the "correspondence" appended to the report of the oral discussions. The proceedings recorded the work of twenty-five ordinary meetings. There had also been twelve supplemental meetings exclusively devoted to the reading and discussion of papers by students. But it was to be regretted that there was some falling-off in the quality of these communications, of which two only had been deemed worthy of a place in the printed proceedings, as against six last year. One, however, had been of sufficient merit to obtain for its author the Miller Scholarship. During the recess the premises had been entirely redecorated, ten years having elapsed since similar extensive repairs had been undertaken. The library continued to augment in an increasing ratio, and contained upwards of 18,000 volumes. Lastly, the Council referred with satisfaction to the financial condition of the Institution. The income for 1882 had amounted to 12,898*l.* 10s. 11d., while the capital and trust-fund receipts were 3,527*l.* 9s. 6d. and 431*l.* 15s. 6d. respectively. The expenditure had reached 12,788*l.* 5s. 7d., and 3,380*l.* 13s. 6d. had been invested in London and North-Western Railway Debenture Stock. After the reading of the report, the medals and premiums awarded for 1882 were presented, and votes of thanks were passed to the president, council, and officers. The scrutineers announced that the following gentlemen had been elected to serve on the Council for the ensuing year, viz.:—President, Mr. J. Brunlees; Vice-Presidents, Sir J. W. Bazalgette, C.B., Sir F. Bramwell, Mr. G. B. Bruce, and Mr. E. Woods; members, Mr. B. Baker, Mr. J. W. Barry, Mr. G. Berkley, Sir J. Coode, Mr. E. A. Cowper, Sir J. N. Douglass, Mr. A. Giles, Mr. H. Hayter, Dr. W. Pole, Mr. R. Rawlinson, C.B., Mr. A. M. Rendel, Dr. C. W. Siemens, Mr. D. Stevenson, Sir W. Thomson, and Sir J. Whitworth.

The Progress of the Free Libraries Movement.—At a meeting of the members of the Metropolitan Free Libraries Association, held on the 22nd inst., Mr. Edward J. Watherston in the chair, the chairman said that, although the association could not record any success in the metropolitan area, yet, within measurable distance of that area, notably in Richmond, Kingston, Twickenham, and Reading, the movement had taken root, and not only had all opposition to it ceased, but old opponents were now found among its warmest supporters. As Londoners they could but deplore the fact that at present the ratepayers declined to avail themselves of a beneficent Act of Parliament, which permitted them to co-operate, by means of a single penny in the pound upon their assessments, for their mutual benefit. The worst feature of this failure to adopt the Act was to be found in the fact that, thereby, the youth of both sexes in London were handicapped in competition with their provincial rivals, who, being better educated as a result of the advantage of their local free libraries, were naturally selected by London bankers, merchants, manufacturers, and others for the more responsible, and, therefore, most lucrative appointments in their respective businesses.

Ryburghe Church, Fakenham. — The lighting up of this church has been carried out by the use of handsome coronæ and pendants, which are fitted with the patent three-wick Hesperus lamp of Messrs. Jones & Willis, of Birmingham and London.

Mr. Guthrie Lornie, of Birnam, has offered a free site in one of the best parts of the village of Birnam for a public hall and institute, together with a subscription of 100*l.* towards the cost.

TENDERS

For building schools for 642 children, and masters' residences, at Grays, for the Grays Thurrock School Board. Mr. E. C. Allam, architect:—

G. Seager	£7,953	0	0
T. Boyce	6,970	0	0
North Bros.	6,890	0	0
Higgs & Hill	6,274	0	0
Staines & Son	6,166	0	0
J. Hill	5,900	0	0
W. T. Niblett	5,700	0	0
J. M. Deering	5,605	0	0
H. J. Carter	5,580	0	0
J. Pavitt	5,530	0	0
J. Brown	5,500	0	0
T. Brightmore	5,473	0	0
Pickersgill Bros.	5,360	0	0
J. Webb	5,299	0	0
S. J. Scott	5,297	0	0
W. Shurmur	5,220	0	0
C. Barnes	5,146	0	0
W. H. Archer	4,885	0	0
J. G. Hasluck	4,872	0	0
W. Wood (accepted)	4,643	0	0

For the construction of a concrete storm-water conduit at Abbey Mills, for the West Ham Local Board. Mr. Lewis Angell, engineer. Quantities by R. L. Curtis & Sons:—

Vernon & Ewens	£6,600	0	0
Marshall	6,000	0	0
Mowlem & Co.	5,429	0	0
Botterill	4,990	0	0
Gentry	4,745	0	0
Munday & Son	4,710	0	0
Bentley	4,640	0	0
Bell	4,470	0	0
Jesse Jackson	4,444	0	0
W. G. Harris	4,383	0	0
Dooley	4,184	0	0
John Jackson	4,175	0	0
Kellett & Bentley	4,100	0	0
J. W. & J. Neave (accepted)	3,854	0	0
Dickson	3,566	13	9

For building imbecile wards at the Union House, Milton, for the Portsea Island Board of Guardians. Messrs. Bevis & Hill, architects, Southsea. Quantities by Mr. G. Rake:—

F. White, Landport	£19,400	0	0
W. Ward, Fratton	18,882	0	0
T. W. Quick, Southsea	18,870	0	0
Longley, Crawley, Sussex	18,794	0	0
T. C. Cooper, Landport	18,400	0	0
H. & W. Evans, Southsea	18,400	0	0
G. Burbridge, Southsea	18,095	0	0
J. Crook, Southampton	17,947	0	0
D. W. Lewis, Southsea (accepted)	16,900	0	0

For new Wesleyan Chapel at Gainsborough. Messrs. Parry & Walker, architects, Doncaster. Quantities not supplied:—

Davies & Hewett	£2,821	12	8
Kelsey	2,770	0	0
Riggall & Hewins	2,495	0	0
Bulling	2,480	0	0
Holmes	2,470	0	0
Chadwick & Co.	2,395	0	0
Crosby & Son	2,250	0	0
Arnold & Son (accepted)	2,136	0	0

For alterations, repairs, and forming gateway through the house, No. 84, Paradise-street, Rotherhithe, and the erection of stabling, &c., at rear, for Mr. F. D. Collen. Mr. E. Crosse, architect, 32, Bermondsey-square:—

Bullers	£595	0	0
Winsor	544	0	0
Wells	524	0	0
Chafen	500	0	0
Almond (accepted)	499	0	0

For the construction of sea and retaining walls, esplanade, roads, and other works, at Weston-super-Mare, Somerset. Mr. T. J. Scoones, Bristol, engineer, Quantities by Mr. Barratt, Bristol:—

T. Small & Son	£35,224	0	0!
Lean & Sons	26,500	0	0
A. G. Beaven	25,150	0	0
J. Dickson	24,000	0	0
Hill & Co.	22,500	0	0
W. Cooke & Co.	22,450	0	0
J. Hartley	21,750	0	0
Lovatt & Mousley	21,490	0	0
D. Baker	21,190	0	0
Jesty & Sons	19,979	0	0
G. Moss	19,648	0	0
J. T. Whittam	18,640	0	0
A. Krauss	17,944	0	0!

For new roads and sewers, &c., at Forest Gate, Essex, for the Land Investment Company (Limited). Messrs. Whitmore & Reeves, surveyors, Chelmsford and London. Quantities supplied:—

T. G. Dunmore, Hornsey	£2,142	0	0
T. Adams, Hackney	1,990	0	0
J. E. Bloomfield, Tottenham	1,980	0	0
C. Wyman, Edmonton	1,950	0	0
J. Hoare & Son, London	1,924	0	0
J. Cardus, Acton	1,875	0	0
J. G. B. Marshall, Stratford	1,828	0	0
R. Nicholson, Southend	1,811	19	1
P. G. Pound, Bow-road	1,809	0	0
J. Bell, Wood Green	1,799	0	0
W. Wood, Chelmsford	1,785	0	0
T. Brightmore, Woolwich	1,734	0	0
A. Oliver, Brighton	1,720	0	0
W. Carter, Anerley (too late)	1,660	0	0
John Jackson, West Ham	1,600	0	0
W. Nicholls, Wood Green	1,539	0	0
J. Pizzey, Hornsey	1,525	0	0
W. G. Harris, Stratford	1,507	0	0
J. C. Trueman, South Hackney	1,499	0	0
T. Spurgeon, Forest Gate	1,498	0	0
G. Impey, Leytonstone	1,486	0	0
Jesse Jackson, Leyton	1,444	0	0
H. Wilson, Lavender Hill	1,395	0	0
J. Bentley, Chislehurst (too late)	1,395	0	0
J. Perry, Merton (too late)	1,298	0	0

For the erection of new offices in connexion with the Chelsea Workhouse extension, King's-road, Chelsea, for the Guardians. Messrs. A. & C. Harston, architects, 15, Leadenhall-street. Quantities supplied:—

Le Gassick & Co.	£7,509	0	0
Beach	5,682	0	0
Nightingale	5,643	0	0
Thorn	5,465	15	0
Crockett	5,353	0	0
Higgs	5,206	0	0
Howell & Son	5,122	0	0
Longley	4,931	15	0
W. Johnson, Wandsworth Common*	4,659	14	6

* Accepted.

For detached villa-residence at Friern Park, North Finchley, for Mr. A. Conder. Mr. W. S. Whicher, architect:—

Gregory & Bence (accepted)	£1,400	0	0

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